

FORESTRY AND IRRIGATION

THOMAS ELMER WILL
FRANK GLOVER HEATON

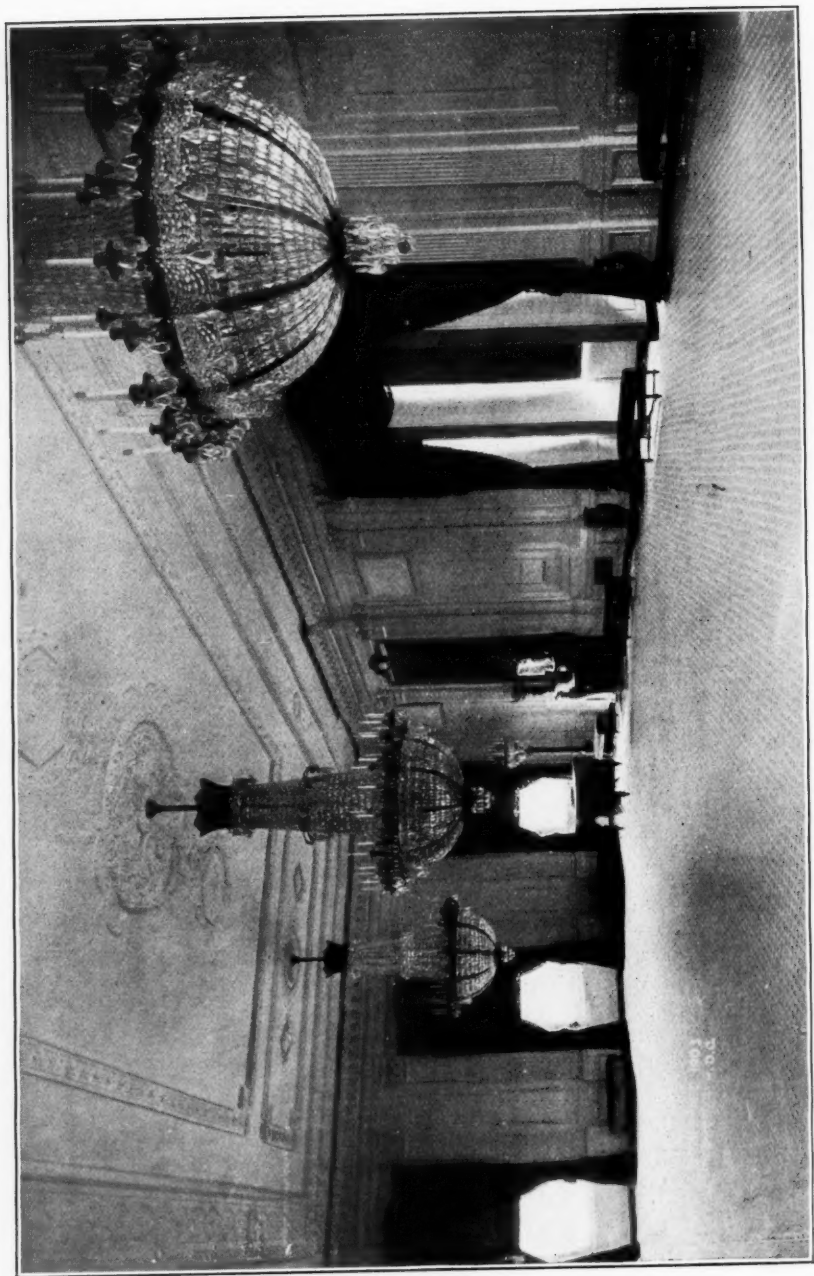
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EAST ROOM OF THE WHITE HOUSE
Where the Conference of the Governors Will be Held, May 13, 14 and 15

FORESTRY AND IRRIGATION

VOL. XIV

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No. 5

THE WHITE HOUSE CONFERENCE

Gathering of the Governors in May---Most Important Conference
in Country's History---Problems to Be Considered
---Makeup of the Assembly

ON MAY 13, when President Roosevelt calls to order the opening session of the "Conference of Governors," a new era in the history of the country will have begun. In the East Room of the White House, at Washington, on that day, will assemble the most dignified and the most thoroughly representative gathering of the nation's leading public men ever brought together; and upon the results of their deliberations hangs the weighty question of American supremacy in the fields of manufacture, agriculture, mining, lumbering, and the hundreds of kindred industries that are dependent upon one or another of the various natural resources of the land.

It is not putting it too strongly to say that never in the country's history has so important a convention been held, and that never before have questions of equal gravity been discussed in any national conference, either in the United States or any other country of the world. Questions that vitally affect every individual in the whole

length and breadth of the land will form the basis of the Conference's discussions, and upon the results obtained will depend, in large measure, the prosperity of the present generation, and in vastly larger measure the prosperity and happiness of the generations to come.

The causes that have led to the calling of this Conference by President Roosevelt are too well known to require repetition. It is sufficient to say that, having become seriously alarmed over the continued destruction of the country's standing timber, the waste of coal, etc., in mining operations, the annual recurrence of disastrous floods, with their concomitants of tremendous destruction of property and loss of life, and the pressing importance of finding ways to prevent such destruction, loss and waste, President Roosevelt has called into consultation the Governors of all the States, together with three advisors to each Governor, and representatives of the great national organizations whose continued welfare and prosperity is gravely men-

aced by a continuance of the present typically American heedless wastefulness.

In addition to the Governors and their advisors, and the delegates from the great national associations, the President has invited six special guests who are expected to lend their aid and advice in the deliberations of the Conference. The six are:

Hon. Grover Cleveland, former President of the United States; Hon. William Jennings Bryan, Mr. Andrew Carnegie, Mr. John Mitchell, former President of the United Mine Workers of America; Mr. James J. Hill, President of the Great Northern Railway; Dr. Albert Shaw, editor of the *Review of Reviews*.

These six gentlemen are expected to take an active part in the advisory work of the Conference. Mr. Carnegie, from his long association with and intimate knowledge of the iron and steel business, is peculiarly fitted to discuss the various phases of the iron-mining industry. Mr. Hill has been chosen to discuss the transportation side of the general economic proposition of national conservation and proper utilization of resources. Mr. Mitchell knows the coal mining industry as perhaps no other man in the United States knows it, and he has, besides, the mental equipment necessary for a logical presentation of the subject, either in written article or in speech.

Mr. Cleveland, Mr. Bryan, and Dr. Shaw are men who, from their breadth of understanding and their ability to grasp big questions of national importance, will be able to add much to the general discussion of the various phases of the problem of conservation. It is considered possible, however, in view of his continued ill-health, that Mr. Cleveland will not be able to attend the Conference, though it is hoped that he will sufficiently improve to make his presence possible.

The list of associations and societies that will be represented at the Conference covers practically every field of scientific and industrial endeavor.

The list follows:

American Association for the Advancement of Science, President, T. C. Chamberlain, University of Chicago, Chicago, Ill.

American Academy of Political and Social Science, President, L. S. Rowe, University of Pennsylvania, Philadelphia, Pa.

American Bar Association, President, J. M. Dickinson, Park Row, Chicago, Ill.

American Chemical Society, President, Marston T. Bogart, Columbia University, New York.

American Civic Association, President, J. Horace McFarland, Harrisburg, Pa.

American Economic Association, President, Simon Patton, Philadelphia, Pa.

American Federation of Labor, President, Samuel Gompers, 432 G street, Washington, D. C.

American Forestry Association, President, Hon. James Wilson, Secretary of Agriculture.

American Institute of Electrical Engineers, President, Henry G. Stott, 600 W. 59th street, New York City.

American Medical Association, President, Dr. Jos. D. Bryant, 32 W. 48th street, New York.

American Institute of Mining Engineers, President, John Hayes Hammond, New York City.

American National Livestock Association, President, J. A. Jastro, Bakersfield, Cal.

American Newspaper Publishers' Association, President, Herman Ridder, *Staats-Zeitung*, New York.

American Public Health Association, President, Dr. Charles H. Lewis, 217 N. Wilmington st., Raleigh, N.C.

American Pulp and Paper Association, President, David S. Cowles, 309 Broadway, New York City.

American Railway Association, President, W. C. Brown, New York City.

American Railway Engineering and Maintenance of Way Association, President, Walter G. Berg, 143 Liberty street, New York City.



HON. GROVER CLEVELAND

Andrew Carnegie
John Mitchell

James J. Hill
Hon. William Jennings Bryan

American Railway Master Mechanics' Association, President, Wm. McIntosh, Central R. R., Jersey City, N. J.
American Society of Civil Engineers, President, Chas. MacDonald, 220 W. 57th street, New York City.

American Society of Mechanical Engineers, President, M. L. Holman, 29 W. 39th street, New York.

American Society for Testing Materials, President, Chas. B. Dudley, Altoona, Pa.

American Statistical Association, President, Hon. Carroll D. Wright, Washington, D. C.

Atlantic Deep Waterways Association, President, J. Hampton Moore, U. S. House of Representatives.

Association of Agricultural Colleges and Experiment Stations, President, J. L. Snyder, Lansing, Mich.

Business Men's League, President, James E. Smith, St. Louis, Mo.

Chautauqua Institute, President, Dr. George H. Vincent, University of Chicago, Chicago, Ill.

Farmers' National Congress, President, B. Cameron, Stagville, N. C.

General Federation of Women's Clubs, President, Mrs. Sarah S. Platt Decker, 1550 Sherman avenue, Denver, Colo.

Geological Society of America, President, Samuel Calvin, Iowa City, Iowa.

Interstate Inland Waterway, President, C. S. E. Holland, Victoria, Tex.

Interstate Mississippi River Improvement and Levee Association, President, Chas. Scott, Rosedale, Miss.

Lake Carriers' Association, President, William Livingston, Detroit, Mich.

Lakes-to-the Gulf Deep Waterways Association, President, W. K. Kavanaugh, 704 Locust street, St. Louis, Mo.

Mining Congress of America, President, J. H. Richards, Boise, Idaho.

Missouri Valley Improvement Association, President, Lawrence M. Jones, Kansas City, Mo.

National Academy of Sciences, President, Ira Remsen, Baltimore, Md.

National Association of Cotton Manufacturers, President, W. D. Hartshorne, Lawrence, Miss.

National Association of Manufacturers, President, James W. Van Cleave, St. Louis, Mo.

National Association of Agricultural Implement and Vehicle Manufacturers, President, C. H. Huhlein, Louisville, Ky.

National Association of State Universities, President, Chas. R. Van Hise, Madison, Wis.

National Business League of America, President, Erskine M. Phelps, Chicago, Ill.

National Civic Federation, President, Seth Low, New York City.

National Council of Commerce, President, Gustav H. Schwab, New York City.

National Editorial Association, President, Henry B. Varner, Lexington, N. C.

National Educational Association, President, Dr. E. G. Cooley, Supt. of City Schools, Chicago, Ill.

National Geographic Society, President, Willis L. Moore, Washington, D. C.

National Grange, President, N. J. Bachelder, Concord, N. H.

National Irrigation Congress, President, Frank C. Goudy, Symes Block, Denver, Colo.

National Lumber Manufacturers' Association, President, Wm. Irvine, Chippewa Falls, Wisconsin.

National Rivers and Harbors Congress, President, Hon. Jas. E. Ransdell, U. S. House of Representatives.

National Slack Cooperage Manufacturers Association, President, H. M. Schmoldt, Beardstown, Ill.

National Wagon Manufacturers' Association, President, W. A. Rosenfield, Moline, Ill.

National Wool Growers' Association, President, Fred Gooding, Shoshone Falls, Idaho.

Ohio Valley Improvement Association, President, Col. John L. Vance, 204 L. Front St., Cincinnati, O.

Society for the Promotion of Engineering Education, President, Chas.

S. Howe, Case School of Applied Science, Cleveland, O.

Society of American Foresters, President, Gifford Pinchot, Washington, D. C.

Transmississippi Commercial Congress, President, J. B. Case, Abilene, Kans.

United Mine Workers of America, President, T. L. Lewis, Indianapolis, Ind.

Upper Mississippi River Improvement Association, President, Thomas Wilkinson, Burlington, Iowa.

In addition to the foregoing, invitations have been extended to both Houses of Congress, to the President's Cabinet, and to the members of the Supreme Court.

As has been stated, the Conference will hold its session in the East Room of the Executive Mansion. The opening session will be held on May 13, and the Conference will sit until the evening of May 15.

Primarily the Conference will be between the Governors of the several states and territories, with their respective advisors; and in general, the character of the discussions will be determined wholly by the executives present.

In the interest of convenience, sessions have been arranged; and merely to bring before the conferees the leading facts relating to the natural resources of the country, with the view of directing discussion along the most practical lines, provision has been made for opening each session with brief, formal statements. As arranged, the outline follows:

May 13.

10.00 a. m.—Conservation as a National Duty, Theodore Roosevelt, President of the United States.

2.30 p. m.—Mineral Resources:

Ores and Related Minerals, Andrew Carnegie.

Mineral Fuels, Dr. I. C. White, Professor of Geology, University of West Virginia, and State Geologist of West Virginia.

General discussion, opened by John Mitchell, former President of the United Mine Workers of America.

May 14.

10.00 a. m.—Land Resources:

Soil, Professor T. C. Chamberlin, University of Chicago, formerly State Geologist of Wisconsin, President University of Wisconsin, and Geologist, U. S. Geological Survey.

Forests, R. A. Long, President of the Long-Bell Lumber Company, Kansas City, Missouri.

Public Health, Dr. George M. Kober, Dean of the Medical Department, Georgetown University, Washington, D. C., formerly President of the Medical Society of the District of Columbia.

2.30 p. m.—Land Resources:

Reclamation by Irrigation and Drainage, Dr. George C. Pardee, former Governor of California.

Grazing and Stock-raising, Hon. J. A. Jastro, President of the American National Livestock Association.

The Public Lands and Land Tenure, Judge Joseph M. Carey, formerly United States Senator from Wyoming.

May 15.

10.00 a. m.—Water Resources:

Transportation, James J. Hill, President of the Great Northern Railway.

Navigation, Professor Emory R. Johnson, Professor of Transportation and Commerce, University of Pennsylvania; formerly Isthmian Canal Commissioner.

Water Power, H. S. Putnam, American Institute of Electrical Engineers.

2.30 p. m.—General Discussion.

It should not be inferred that the above outline covers the entire range of topics to be discussed at the Conference, or that discussion will be confined to the subjects mentioned in the outline. It is also to be understood that there will be other papers and addresses besides those mentioned in the outline.

The opening address by President Roosevelt, who will be chairman of the Conference, will strike the keynote of the meeting; and it is planned to have discussions which, while following the general lines laid down in the outline, will be broad enough to cover the entire field of conservation of natural resources. The fact is recognized that the three days set for the Conference will be all too brief to permit the thorough discussion of the

subject; but it is believed that, as an outcome of the White House Conference, there will be formed some sort of permanent organization of the executives of the several states and territories; and it is further believed and hoped that, through such permanent organization, definite and comprehensive plans will be formulated for a conservation movement that will be truly national in its scope, and that will result in the general adoption, by the States and the Federal Govern-

ment, of far-reaching measures looking toward reforestation, forest conservation, the re-grassing of the range lands of the West, conservation and full utilization of the country's water resources, both for purposes of irrigation and power, and, in fact, a general and well directed movement for the husbanding of existing resources and retrenchment as regards present methods of use of what the Nation possesses in the way of timber, water, minerals and other natural wealth.

THE GOVERNORS SAY

THE following symposium, culled from the letters of the Governors accepting the invitation to attend and participate in the Conference at the White House, May 13, 14, and 15, is significantly indicative of the interest that is being taken by the leading men of the country in the gathering. Not all of the Governors have been quoted, for the reason that lack of space forbids; but the expressions selected at random from the numerous and in some cases voluminous letters serve well to show the trend of the whole mass of correspondence.

B. B. Comer, Governor of Alabama:

"Please allow me to congratulate you on the call for this meeting, and to congratulate you on your general good work for the country and for the people in many respects. I shall gladly accept for myself * * * I feel sure that much good will result from the Conference itself, and from the commingling of these officials and citizens."

Joseph H. Kibbey, Governor of Arizona:

"I agree with the views you express, without reservation. I do not think you stated the facts too strongly when you expressed the opinion that 'there is no other question now before the Nation of equal gravity with the question of the conservation of our natural resources,' and to me it has been especially gratifying to note the warm approval with which the thinking people of the West received the speech from which this quotation is made. The proposed Confer-

ence will, in my judgment, do great good, and I take pleasure in advising you that I intend to be present."

E. W. Hoch, Governor of Kansas:

"Kansas is the most inland of States. No great navigable river traverses its territory, but I think I voice the sentiment of our people when I say that we are heartily in favor of the improvement of all our inland waters for transportation purposes, and the conservation of all our waters for irrigation and manufacturing purposes. Kansas has no public lands, agricultural or mineral, but it is in favor of preserving what remains of these to legitimate business enterprises, and to prevent their absorption by speculators. Kansas has no timber lands, but it is in favor of preservation and restoration of our National forests. * * * And I trust that the proposed Conference will crystallize your ideas into an organized movement that will ultimately accomplish all the results you desire."

J. N. Gillett, Governor of California:

"The conservation of our water, and the application of it to power, and irrigation also, are questions of great moment to us. I heartily approve of any scheme which will preserve to our people the natural resources of our country and save the same, not only for our present uses, but for the uses of those who are to follow us."

Curtis Guild, Jr., Governor of Massachusetts:

"May I state that the present duty on wood pulp and forest products is tending not only to destroy our natural resources, but is a menace to the head waters of the rivers that furnish the wa-

ter supply and the water power of the Commonwealth of Massachusetts? If nothing else is done in the way of tariff revision, the need of immediate action in this respect appeals particularly to those States which, like Massachusetts, find their attempts at reforestation, through the efforts of State laws and State foresters, negated by the bounty given by the tariff to the destruction of the trees."

C. S. Deneen, Governor of Illinois:

"I appreciate fully the importance of the movement which you have inaugurated, and shall be pleased to do anything within my power to assist you in this regard."

Fred M. Warner, Governor of Michigan:

"The plan outlined for a Conference that shall have for its object the discussion of methods for the conservation of our country's great natural resources meets with my cordial approval. Our people's energies have been devoted to the development and exploitation of these resources for more than a century and a quarter, and the time has come when this policy should be followed by an era of conservation. How to bring this about is a problem now confronting us as a people, and to its solution we should devote the best there is in us."

Albert B. Cummins, Governor of Iowa:

"I am wholly in sympathy with the movement that looks to the conservation of our natural resources."

John Sparks, Governor of Nevada:

"It must be conceded that our people, insofar as conservation of natural resources is concerned, have been wasteful in the extreme. Your call to the Governors and their advisors, as outlined in your letter, meets with my hearty approval. An exchange of opinion in such a gathering will certainly be productive of great good."

J. Frank Hanly, Governor of Indiana:

"I am in hearty sympathy with the purpose which has prompted the call for this Conference, and if I can be of any service to you at any time, you may command me."

R. B. Glenn, Governor of North Carolina:

"I will make it a point to be present and take part in this meeting, which, I think, will be of incalculable advantage to the entire Nation. I can assure you, Mr. President, that nothing will give me more pleasure than at any and all times to aid, in any way in my power, in the upbuilding of the great natural resources

of our Nation, and in preserving from willful and malicious destruction our forests, mines and other natural sources of wealth."

F. R. Gooding, Governor of Idaho:

"This meeting, I am sure, will be productive of much good. It should arouse the people to the importance of conserving the natural resources with which this country has been so generously blest. The people have looked upon these resources as inexhaustible; waste and extravagance have been practiced on every hand, until the citizen who has taken the time to look into our great resources is becoming alarmed for the future interests of the country."

C. N. Haskell, Governor of Oklahoma:

"I believe that this Conference will be of much benefit, and that the study of these subjects—the natural outgrowth of such a conference—will be vastly beneficial to posterity."

M. F. Ansel, Governor of South Carolina:

"I have for some time taken great interest in the question of the conservation of our forests and waterways, and I have been made mindful of the fact that unless something is done to conserve these interests, our posterity will not have what they are entitled to from our hands. And I realize the importance of this great question to our country at large."

John C. Cutler, Governor of Utah:

"The suggestions regarding the conservation of the natural resources of our great country are most timely and appropriate. It has been evident for some time that the people of America are too wasteful of the splendid patrimony God has given them. Apparently assuming that our resources are inexhaustible, we have manifested an extravagance which, if allowed to go unchecked, will impoverish the country and transmit a bankrupt commonwealth to later generations. This condition is not so apparent in the West as in the older regions of the East. But that is all the stronger reason why we of the West should take the matter in hand and stop the wasteful tendency before actual need confronts us. For the tendency toward extravagance is at least as great here as in the East; its results are not yet so apparent only because it has not prevailed so long."

William M. O. Dawson, Governor of West Virginia:

"I beg to say that I am in hearty accord with the purpose of the meeting, and am glad indeed that you have

called this Conference. * * * West Virginia is very greatly interested in this matter, as there is great waste in this State of natural gas, oil, coal and timber. And I beg to suggest that a meeting of the Governors of the States, such as you propose, will be beneficial in other respects."

Bryant B. Brooks, Governor of Wyoming:

"Personally, I am strongly inclined to the belief that the proper conservation of our natural resources can better be promoted and safeguarded by arousing local interest in the subject, and by enacting strong and suitable laws in our State Legislatures, and giving the States the widest possible power and control, rather than by turning everything over to Federal authority, to be controlled through Federal Bureaus."

Joseph W. Folk, Governor of Missouri:

"I fully appreciate the importance of this subject to every section of the United States, and the necessity of some action being taken to conserve those resources upon which our continued prosperity so largely depends."

E. F. Noel, Governor of Mississippi:

"The question—of conservation—is one of great importance, and I shall gladly give all possible aid to the promotion of the objects of this Conference. I intend to bring the matter to the attention of the Legislature, with a view to having the question forcibly presented to our Senators and Representatives. I do not know what action has been taken by our Representatives in Congress, in the past, in regard to the better conservation of our natural resources, but we shall try to quicken their interest in the subject."



THE HILL MAN'S LAMENT

By Arthur Chapman

[The most inaccessible parts of the forest reserves in Colorado will soon be put in telephone connection with civilization.—Government Report.]

I'm off for the undiscovered ways,
Along with the old pack horse;
I want to spend some cheerful days
By the side of a water course;
I want to get in the deepest wood
Where wild birds dare to sing,
And—pardner, be this understood—
No 'phone goes brrr-ing-ing!

I've ranged the hills for years a score,
And fled from pillar to post,
To get away from the trains that roar
On their way from coast to coast;
But now they're stringing wires through
The last haunt where I cling;
So I'm up and off to a country new
Where no 'phone goes brrr-ing-ing!

The frontier's gone, and the cowboy, too—
The shepherd's doomed to go—
For a man who loves Dame Nature true
There soon won't be a show;
So it's up and pack, and pull my freight
To a land where Solitude's king;
And where there's ne'er that sound I hate—
The telephone's brrr-ing-ing!

—Denver Republican.

WORK IN A NATIONAL FOREST

BY

Charles Howard Shinn, Supervisor of Sierra (North) National Forest

No. 7: Land, Indians and Whisky

HAVE something of a story to tell, and a few questions to ask of those fellow-workers in the Service who are up against these particular problems. They belong mainly to California, for in most States the Indians are on reservations and more directly under Governmental control than here. Even in California the special difficulties that I shall describe are less serious south of the Tehachipi. As it happens, my friends Bigelow of Klamath, Barrett of Lassen Peak, Elliott of Tahoe, Britten of Stony Creek, and a few others of the northern and central forests of California, besides some of our Pacific Coast Inspectors, are the ones who can contribute most to a symposium upon Indians. I hope that the energetic editor of *FORESTRY AND IRRIGATION* will wisely trouble all these, and others too, for contributions along this line.

The full-blooded Indians of California are estimated to have numbered 210,000 in 1834 under Spanish rule and before the Days of Gold. They now number but 17,000, and about sixteen hundred of these live in the National Forests. A map was prepared in 1907 for the Northern California Indian Association, which map shows some nineteen points in Sierra North at which Indians live in numbers of from ten to one hundred. These places are not really "rancherias," though they are commonly called so. The little Indian homes are scattered here and there, wherever a spring can be found and a little pasturage for a few horses. These Indians wander around to each others' camps at different seasons, or up into the higher mountains, or down to the plains for

the hop-picking and grape gathering, returning to their homes in winter.

In 1906 the report of C. E. Kelsey, Special Agent for the California Indians, was issued, in which he says: "There is also quite a number of Indians located within the boundaries of the Forest Reserves. According to figures of your Special Agent they number 1181. They have no title to the lands they occupy, and since the establishment of the Forests it is uncertain whether the lands within their boundaries can legally be allotted to them." Mr. Kelsey says further that the Indians are protected by the forest regulations and that there is "no occasion for any action in respect to any of them."

Mr. Kelsey has again visited this forest (March, 1908) and, comparing notes, we decide that the total number inside of the forests is fully 2,490, and a complete census will certainly bring it to 3,000 or even 3,300 when the proposed additions to several forests are made. The number in Supervisor Bigelow's bailiwick is not less than 790; Sierra North, when the proposed new area is taken in, will include not less than 862; Sierra South and Sierra East have some; Monterey has a few; Diamond Mountain, Shasta, Trinity, Stony Creek, Tahoe and Stanislaus hold about all the rest. We are making a census here; and it is a heavy piece of work, too, for we want it more than a mere alphabetical list; it must include all attainable personal, historical and economic facts.

Evidently the problems pressing upon those who wish to give the Indians "a white man's chance" are many and serious. In fact it appears

to me that the attitude taken by forest officers towards the Indians within their jurisdictions is exceedingly important. We have it in our power to help them in perfectly simple, direct and practical ways free from sectarianism or sentimentality. We can understand them, and their needs, better than most people do, and we can help their slow, halting progress.

Dr. Merriam, of the U. S. Biological Survey, one of the most charming of men and earnest of scientists, has said that the chief cause for the decrease of the Indian population in California—from 210,000 to 17,000—was the "relentless confiscation of their lands and homes." The Indian delegates to the Zayante Conference held in Santa Cruz County, July 19, 1907, placed as their first appeal: "We want land for homes. Our land has been taken from us. We have been kept by law from taking up land until all the good land was gone."

On this point all the Indians that I know are strenuous. "Indian want paper on his land," is the way they put it. But what they really mean to say is that they want absolute safety in some clear, definite and final way. It must be made certain that no one can ever take their homes away. The more thoughtful of them know that it is dangerous at present to give them the power to sell their lands.

This brings us to the main problem of the land question, on which the Service has been working for some time: How shall their little patches of tillable ground in the rocks and timber be so secured to the Indians as amply to satisfy their claims without permitting white men to take it from them by fraud or force? It is not as if the land were farming land. It is not; it is mainly pastoral, and speculators would like nothing better than to have hundreds of Indians take up a quarter-section each, and then lease, or ultimately sell it all. The land they want in this way is largely woodland.

Cleared and handled by men of capital and horticultural skill it may eventually lend itself to higher than pastoral uses, but certainly not now. And as certainly it will grow firewood—oaks, manzanita, and the inferior pines. At present white men will not take it under the Act of June 11, nor can they profitably use it, except for pasture.

Now, since the Indians are not citizens, they do not come under the Act of June 11. Nor does the so-called Indian Allotment Act appear to apply within the forests, for which new legislation is necessary. But the tendency of recent congressional action has been to break down the safeguards of that famous law of 1884 by allowing Indians to lease, and practically to transfer their lands. Thus we are brought to a point where the Indians are easily led to believe that various officials are deliberately avoiding the obligation of securing to said Indians the little patches of tillable land which they need.

One Indian said to me: "White man talk, talk; give Indian no land. What for Indian get no land?"

To which I said: "You got land now. You go your cabin, cut brush, make fence, sow hay. You work—that your land."

Under the present regulations of the Service I presume that ample and non-transferable leases could be given to Indians for all the land they actually use, and for the additional areas as fast as they clear off the chaparral. I have no doubt that an intelligent lease system is sufficient for years to come, and it also retains control of the timber. When the Indians become citizens, they can receive patents to their homes. Meanwhile let us teach and train them for the responsibilities of citizenship.

But, as it so often happens in real life, many of the friends of the Indians take exactly the same view of the case that their enemies do. Bad whites want each Indian to get a pat-

ent at once to a quarter-section of land—so that it can be alienated for a little whisky. A few short-sighted friends of the Indian want him to wait till he can get an allotment in some remote future, or even run the risk of an immediate patent because they think it "mere justice." So the Indian is too often told, "You want same paper white man get."

Meanwhile, and until those in authority settle the procedure, what do the Indians in the forests get? They have, I think, absolute protection here and now, in all their rights of what lawyers call "useage" as against any interloper. True, it depends on the forest officer and the Service, but do not white men's rights depend on white men's courts? A friend of mine is just now trying to dispossess a fellow who jumped his patented claim in a town, in broad daylight, and is living there at the present time. The Indians up here, believe me, are much better off.

There was the case of Jim Roan. He is a full-blood Indian of first class standing and he wanted to build "one cabin on my land, where I live long time ago". One trouble about handling Indian cases is to get exactly the Indian point of view. They move around a good deal; but they hold tenaciously to the belief that to every place where they once dwelt they have some sort of a possessory right.

The Roan case came up in old Land Office days. When I looked it up, it was perfectly evident that Jim had once had a cabin there; that it had burned down; that he had always called it his own little flat, in the oak country over by Ahwahnee. But some white neighbors immediately objected for all sorts of irrelevant reasons. The real reason was that they had cattle, and the little flat was handy. But outside range was near and abundant, and even if it had not been, Jim's claim was a better one in equity. So he rebuilt his cabin, fenced his little garden, runs his few horses on the

range and has become a strong support to the forest.

There was the more recent case of "Bill Grant's wife's mother," an Indian woman who claims a field that she had cleared years ago and had surrounded by a brush fence. She lives with Bill, who has a quarter section; but this little outside field is her own. A white man came along, entered under Act of June 11 an adjacent quarter, and securing a permit to begin operations, calmly took possession of the Indian woman's field, plowed, sowed grain there, and made preparations to build. An Indian rode up one night and told me all about it.

"What she do?"

The next morning I sent a ranger there—a two day's trip—and the white man was moved back to his own land with a terse warning to be good, or something worse would follow; and Bill Grant's wife's mother is again in possession. If she had a patent, but no Forest Service at hand, how could she hire lawyers when a white man jumped her claim?

There is the case of Mrs. Emma, who is a famous laundress, and knows as well as anybody does when she is treated fairly. The ranger ran out the lines of the land she wanted and I told her she might put an addition to her cabin, fence, plow and sow just as she chose, and I had the rangers brush out a new road for her when her old one was shut off by the creation and fencing of Sight Rock Range Station.

I could tell dozens of such stories to show how safe are the homes of the Indians in this forest under Service management. But is this really enough? And, further, how shall Indians who have no homes as yet acquire them, unless by leases? Would it not be well to have each Supervisor empowered to allot to Indian families whatever lands they can use, on some carefully thought out lease system, and to have the Indian Commission take steps to show these Indians how best to improve and utilize these small holdings?

The second great need of all our Indians is protection from the liquor traffic. The Indians are realizing the evil of this traffic more than ever, and they are trying hard to stop, but disreputable white men conduct low-class saloons and smuggle whisky to the Indians; half-breeds and worthless whites carry it to the rancherias, where unnamable crimes have been committed in drunken debauches. The fact is, our laws are defective and public sentiment is not yet fully aroused. Indians when they get drunk are especially dangerous to themselves and others. They lie in the villages or by the trails or in the rocks, some times all night without shelter.

This forest is full of strange and sad stories of Indians and whisky. I remember how old José came to my cabin once.

"Huh! You know that Cap Wah-Wah? He get big drunk. He go home, an' take he wife an' drag her all roun' by her hair; he kick her; he run; he yell; he tumble down. He ver' bad Injun. What for white man no put Cap Wah-Wah in jail?"

Whisky killed Cap a few years later—one of the best workers in this region, too, when he could be kept straight.

There has been much complaint about the laws in regard to Indians and whisky. The old California statute made it a felony to sell or give intoxicants to any Indian. But it proved very hard to get a jury to send a man to State's Prison for this offence. The law was amended so as to read "misdemeanor."

One District Attorney in California has secured forty convictions under this amended act. But of course, officers must have the honest and steady backing of public sentiment.

The friends of the Indians are trying hard to bring the whole matter under United States law. It is believed that the law should forbid sale or gift of intoxicants to Indians and to men of mixed blood, and that cases should be tried in the Federal courts.

When a growing public sentiment suppresses the so-called "road houses" and the village saloons, the evil will be handled easily. It is surprising how many people are in favor of prohibition through local option everywhere in these mountains.

Thirdly, nearly all the Indians up here are anxious to educate their children. There are about 17,000 Indians in California, you know, about a tenth of them in the forests. About 12,000 of these (including all the forest 1,700) are not on reservations, and the Government has done nothing at all for them as yet. As Helen Hunt Jackson said long ago, we seem to have kept our help entirely for the tribes that did the most dare-devil fighting. In this forest the children are so widely scattered that few of them can reach the public schools, which take them in, though sometimes a little under protest. These Indians need boarding schools for their children. In other words, the Government should feed and clothe their children for a few years.

But I think I know what real education should mean for these mountain children of a despised and forgotten people. It should be in the main that sensible industrial training of which Hampton and Tuskegee struck the key notes. They ought to be shown, by example and by daily practice, the bread and butter trades of life. That means that some very capable and practical men and women must come and live among them for years, to gain their complete confidence; and lead them, millimeter by millimeter, up the trail to good citizenship. The time will come when educated Indian doctors, nurses, lawyers, and missionaries will be fitted to work among them; but not yet, nor for years to come. Just now the children want to be taught how to plant and care for orchards and grain fields, how to build houses and raise live stock, how to shoe horses, keep poultry, and make butter and cheese.

If all this appears to anybody a little

aside from one's legitimate forest work, let me tell you about a few of the things that happen up here where we have to deal more or less with Indians every day of our lives.

First, I shall illustrate what the Indians think about the National Forest. Once a very drunken Indian walked up in front of me and gave a yell. Then he said: "You heap big man—own all land—million million acres!" Then he went off leaving me to reflect on the bigness of my ranch.

Second, let us consider the willingness of all the Indians, when sober, to accept guidance; and their capacity, in the main, to pick out their real friends. Nothing in the whole Indian problem seems to me more wonderful than this. After so enormous an amount of suffering as these people have endured, they meet good will half way; they finally give us their faith in the most complete manner.

There was old Julie, who lives all alone in a cabin on the side of Goat Mountain. It was built by her Frenchman years ago; he was a workman on a certain infamous mining swindle, the great placer mining ditch of this region, floated on Parisian capital by a small promoter. He took the girl from her rancheria, named her Julie, taught her much, died in this cabin—and she lives on and on, without change or forgetfulness.

One time we had a fire up there; Julie sat in her doorway and watched us; we filled our canteens at her spring. The next day the rangers wanted to sleep, and she "spelled" them on the fire line. She made coffee, too—her coffee—in an old tin can.

Well, the boys gave her some grub, and I paid her for half a day on the fire line, and she thought it was pretty nice. Then I heard lots of pleasant tales about her. One was how a man, now a ranger, had once been ill and wanted to stay in a tent near her spring. She told the man's wife: "Your man he sick; put him in my house." And she went out under a pine tree, and slept in utter content.

One very cold and rainy night there was a knock at my cabin door. It was old Julie, wet and draggled, but serene as a princess.

She announced: "I stay here."

"Where you come from, Julie?"

"I stay here to-night."

"Why, sure; come right in; get warm at fireplace; my wife make you some supper."

"I got horse; he stay here to-night."

So we took care of her horse, and the next morning when the storm was past, she made ready to leave.

"Well, goodbye, Julie; good luck to you."

"Wait, I show you." She untied a piece of cotton rag and brought out her small store of silver and tendered it all. "You take."

"No good take money, Julie; all friends; you fight fire, too."

One swift look, then a cheerful laugh. "All right. Goodbye."

Now you, who teach language in universities, can you set forth a terser, more idiomatic English than this of Julie's? Oh, the loads that I have seen this poor old Indian woman carry up the rough trails would stagger a mule! There are many more of just the same sort, growing old, and as full of courage as it is possible for any human being to be.

It is time to stop, and it is midnight, too; and magazine forms will not stretch. But let me put emphasis, in closing, on just this: That not least among the responsibilities carried by a forest officer are those which arise from the presence of dependent human beings of every kind. We all know the Grazing, the Special Use, the Timber Sale problems, all of which are tied up with human affairs. The Act of June 11 and the Indian Allotment and Lease problems have put gray hairs on the tops of some of our heads. But they have done us good, after all, for we have gotten closer to the plain people, white, brown and red. And it doesn't hurt to keep a box of apples for the Indian children, or a cigar for your Indian wood-chopper.

EDITORIAL

A Notable Conference.

It is a peculiar fact, not recognized by many of those who have read in the daily papers news articles in regard to the coming conference at the White House, that never before in the history of the United States has it seemed advisable that the Nation's Chief Executive call into convention the Chief Executives of the several States. No circumstance has seemed so great; no contingency has loomed so gravely upon the horizon, as to make it seem necessary for the President to call into consultation the Governors of the States, for the purpose of counseling with them as to the means to be adopted to forestall threatening disaster.

Not even when the civil war impended, and the country's very existence was menaced as it never was before, was such a council suggested. With war clouds lowering, and the grim mutterings of rebellion growing louder and more threatening month after month, and year after year, no President conceived the idea of calling together the different Governors, that the disputed questions might be discussed as calmly as possible, in the hope of finding, in a council of the wise, a solution of the problems that afterward were discussed with rifle and cannon and washed out in torrents of blood.

But the thing that was not deemed necessary, or that was not thought of at all, when the Nation faced the prospect of a bloody internecine strife, has been considered vitally needful in a time of peace; and for months past preparations have been making for this, the first conference in the history of the country at which the different Governors will meet to consider, with the country's President, and with the ablest men now living, a problem so grave that even a brothers' war is play beside it. For surely the questions and the problems having to do with

and bearing upon the conservation and proper use of our natural resources are worthy to be ranked as of the deepest importance to the people of the land.

The continued prosperity of a nation depends absolutely upon the proper use and the proper conservation of that nation's natural resources. If the resources are wasted, then will the nation sooner or later become bankrupt; just as is assuredly the case if the resources of an individual are wasted, or permitted to escape their fullest proper utilization. In the case of either nation or individual, ultimate bankruptcy is certain unless capital is husbanded; and in the case of a nation, the resources originally provided by nature are the capital. The results accruing from proper utilization of such resources are the interest earnings of that capital; and no nation that ever existed can sustain a continued impairment of its capital without impairing its earnings.

It is these facts, and the rapidly increasing general appreciation of them, that makes the coming conference at the White House of such momentous importance. Starting with a natural equipment, in the way of timber, mineral and soil resources, of a richness and diversity such as no other country in the world's history could boast of, we Americans have wasted our heritage to a point where its ultimate extinction is a matter of years, unless we face about and make a determined and understanding start in the direction opposite to that in which we have been traveling. And that the conference called by President Roosevelt will result in a crystallization of public sentiment such as will make an about-face easily possible is the belief of those best informed as to the present status of the nation's natural bank account.

The preliminary steps in educating a people to the necessity for the adop-

tion of a revolutionary course of conduct are always the most difficult; once well started on its way, the course of an educational propaganda, that roots in human necessity, is comparatively easy. The preliminary steps—the primary grades, as it were—are the ones in which endless tact, exhaustless patience, and a deep and broad understanding are prime requisites. The propaganda of conservation has been carried on for years, with more or less success, in this country; every succeeding year a larger number of thinking men and women have been brought to see the absolute necessity for a program of retrenchment as regards natural resources. And now the time has come for a conference such as the one to be held in Washington during the early part of May.

The whole reading population of the country is more or less familiar with recent events that have led up to the calling of this convention of the Governors, their advisors, and the country's leading men—this national, unofficial conference of public officials, sitting in the capital of the Nation, with the Nation's Chief Executive as chairman. Truly unique, this gathering; and truly great must have been the crisis that has brought it about.

The Woods We Have. Americans have long been known as a practical people—a nation of men of business sagacity, with an eye out for the main chance. This being true, is it not amazing when one considers the indifference of Americans, business men, professional men, farmers and men in every walk of life, in regard to the absolutely vital questions now confronting the country? How slight is the realization—that is, the really popular realization—of the extent to which deforestation, with all its evil consequences, has been pushed in this country! It is common to hear one of these uninformed men say, when forest conservation or reforestation is under discussion:

"Bah! All talk! Why, we have plenty of trees; look at them!"

And the hand is waved in a horizon-embracing sweep.

There are trees, to be sure—lots of them. But of what sorts? Go into the woods and count the hickories, the white oaks, the black walnuts, the white walnuts, the elms, and other hardwood trees. It will not require much counting. Even of the ash there are few specimens left; and rock maple is practically gone. There are woods, to be sure, but what are they? Soft maple, dogwood, sassafras and bushes of various kinds—not even a poplar in a five mile walk through the "plenty-of-wood" the uninformed take in in their sweeping gestures.

North, and east, and south, and west, the condition is the same. The pines are almost gone; red cedar is as scarce and as valuable as mahogany, almost; and about all that is left is beech and soft maple—equally worthless for lumber—and the undergrowth that gives the appearance of dense forestation to the hillsides. And there—right there—is the explanation of high lumber prices that confront those who would build their homes. With little or no pine or poplar, little or no elm or ash, little or no oak, rock maple or walnut, how can one expect to avoid high prices? This much for the purely materialistic, selfish side of the forest question.

Soil erosion, another phase of this all-embracing problem, comes from deforestation, as surely as rain comes from the clouds. Deforested slopes, mistakenly put under cultivation, plowed, harrowed and left free to throw their soil into the nearest water-courses—how much, in the aggregate, do these take from the nation's wealth in a year's time? Ask the men who work the dredges that are constantly in operation in the harbors of the Atlantic seaboard; ask the men whose task it is to clear the channels by which the Mississippi flows into the Gulf. A billion tons a year, of the most fertile soil from the farms of the Middle West, wastes itself in the waters of the Gulf of Mexico—enough to make a blanket a foot deep over the entire

State of Illinois. Millions of dollars wasting every year, because the practical American can not see the necessity of caring for the forested uplands he already has, and the further necessity for reforesting such uplands and slopes as have already been scourged and skinned with the ax and the cross-cut saw.

There are plenty of men yet active in daily life who can recall the time when freighting on the Wabash River was a regular occupation for scores of men. Strings of flatboats, and heavy barges, propelled by steamers, worked on the Wabash as far up as Lafayette, Indiana; and their working season ran practically through the year. Today, one may see, occasionally, a little sternwheeler, pushing a single barge, carrying corn or coal as far up as Terre Haute—over one hundred miles, by river, below Lafayette. And it is only during high water in the spring that even this is to be seen. These boats used to run to Cairo, Louisville or Cincinnati: but they have not made such trips in a good many years. Because the Wabash has no longer a permanent channel—the channel that used to be is filled up with silt and sand, with logs and with gravel bars, until what used to be a waterway is now merely a drain, filled and overflowed for miles on either side during the flood periods, and reduced in size to a creek through the rest of the year.

The expense of dredging and caring for the channels of the Ohio, Mississippi, Miami, Kanawha and a few other Middle West rivers, and of dredging the harbors and streams of the Atlantic seaboard, is more, in a single year, than the whole sum that would be required to make the northern crest of the Appalachians—the White Mountains—a National Forest. Government, municipal, state and private expenditures for such dredging amount to a sum so stupendous that, with the money so expended in five years, the crest of the Appalachians, from Maine to the Carolinas, could be made into a National Forest.

Inter-relation of Phases. The question is syllogistic; it runs thus: The

country needs a system of waterways, in order that the strain on the railroads, and the country's mineral resources, may be relieved; to make sure and permanent such a waterways system, forested hillsides and mountain crests are necessary. Forest conservation and intelligent reforestation mean an equable flow of rivers, an equable distribution of surplus waters, a lessening of the constant strain upon the country's transportation facilities, a lessening of the steady drain upon the coal and iron mines, and a steadily increasing timber supply, as well as a means of preventing soil erosion and the consequent appalling drain upon the farm fertility of the land. And the answer to the whole question equals a good business proposition—a sound, safe and increasingly valuable investment.

These are a few of the things that make the coming White House Conference the most momentous convention that has been held in the history of the country. To find correct answers to the big questions that are to be discussed at this Conference will mean more to the country—now, next year, and the years to come—than all the questions of tariff, of political expediency, of world-relations, that could be discussed in a century. Are the American people practical enough to see and to realize fully the importance of these problems, and the importance of finding solutions for them? Are the American people practical enough to see the value—present and future—of the investment they are called on to make? Or are they willing to go ahead, checking against their capital while discounting the interest on that capital, until at some not distant day, the nation awakes to the fact that it is bankrupt, so far as natural resources are concerned?

The Appalachian Bill

False reports regarding the action by the House Committee on Judiciary on the Appalachian-White Mountain

Bill have recently been widely scattered. It was stated that the Committee, by a majority vote, had declared the whole proposal unconstitutional. Instead, the Committee had, at that time, taken no action, for or against, save to consider the measure.

On April 22, however, the Committee unanimously adopted the following resolutions:

"Resolved, That the Committee is of the opinion that the Federal Government has no power to acquire lands within a State, solely for forest reservation; but under its constitutional power over navigation the Federal Government may appropriate for the purchase of lands and forest reserves in the States, provided it is made clearly to appear that such lands and forest reserves have a direct and substantial connection with the conservation and improvement of the navigability of a river, actually navigable in whole or in part; and any appropriation made therefor is limited to that purpose.

"Resolved, That the bills referred to in the resolutions of the House, H. R. 10456 and H. R. 10457, are not confined to such last mentioned purpose, and are therefore unconstitutional."

To the superficial, this action might appear to block the entire movement for establishing the forests proposed. Such, however, is not the case. It is now only necessary so to modify the Appalachian bill as to bring it into harmony with the requirements of the Judiciary Committee. Representative Weeks, of Massachusetts, has introduced a bill. Representative Pollard, of Nebraska, has also introduced a far-reaching bill providing for continued private ownership of the Appalachian area, but for Government regulation of cutting. Both these bills have been referred to the House Committee on Agriculture, which is expected to meet this week. Still another bill may be offered in Committee, as a substitute for the Currier and Lever Bills.

Friends of the Appalachian-White Mountain forest proposal should concentrate their attention upon the Agricultural Committee, urging the favorable report of a measure which will protect the forests, streams and de-

pendent interests of the areas involved. Following are the names of the Committee:

Committee on Agriculture, House of Representative:

Charles F. Scott, Kansas, Chairman, 2nd District; Jack Beall, Texas, 5th District; W. W. Cocks, New York, 1st District; Ralph D. Cole, Ohio, 8th District; G. W. Cook, Colorado, at large; Clarence C. Gilhams, Indiana, 12th District; Kittredge Haskins, Vermont, 2nd District; Gilbert N. Haugen, Iowa, 4th District; W. C. Hawley, Oregon, 1st District; J. T. Heflin, Alabama, 5th District; John Lamb, Virginia, 3rd District; A. F. Lever, South Carolina, 7th District; William Lorimer, Illinois, 6th District; J. C. McLaughlin, Michigan, 9th District; Ernest M. Pollard, Nebraska, 1st District; Wm. W. Rucker, Missouri, 2nd District; A. O. Stanley, Kentucky, 2nd District; J. W. Weeks, Massachusetts, 12th District, Wm. H. Andrews, New Mexico, Territorial Delegate.

Of these Messrs. Cocks, Haskins, Lamb, Lever, Lorimer and Weeks are counted as certainly for the desired legislation, except that Mr. Lorimer is away; Messrs. Gilhams, Heflin, McLaughlin and Stanley are also believed to be favorable.

The fact that Representative Pollard, who has been regarded as antagonistic to the legislation, should have reported a measure of such comprehensive character is a favorable omen.

There is talk of adjournment about the middle of May; no effort should be spared to secure the enactment of this legislation in the present session.

Some Criticisms Considered An editorial from the *Great Southwest Magazine* (Denver) is being distributed anonymously as a folder. The folder is entitled "The West to the East, An Appeal." The editorial is said to be representative of the sentiment of the mountain States.

This editorial makes some important concessions. It says: "It is proper enough that the Nation should be edu-

cated to a startling realization of how we have recklessly squandered our heritage of forests, soil and other natural resources for over a hundred years. Our prodigality has been shameful and criminal." It says: "No where in the world are forest reserves more enthusiastically approved and appreciated as an institution as in this arid Western country." It refers to the Appalachian-White Mountain forest proposal as a far-seeing one. It speaks of the Government Reclamation work with the highest approval. At the same time it offers some sharp criticisms.

It is strongly opposed to Government control and leasing of the open public range. This proposal, in its view, is demanded by the Forest Service and by big cattle owners, in each case for revenue only.

This policy, it claims, is highly detrimental to the interests of the communities immediately concerned. The big cattle men anticipate long leases of land from which the home-owner would practically be excluded. Thus the settlement of the country would be retarded and opportunity denied the man of small means seeking a home.

In answer it may be said that whatever interest the Forest Service may have had in revenue, whether from National Forests or range, in the past, it has none now. The Fifty-ninth Congress provided that all revenues from National Forests should, hereafter, be covered into the Federal Treasury, and the Forest Service should be maintained not by revenues from the National Forests but by direct appropriations from Congress. Revenues from the range would, of course, be no more available to the Service than revenues from the National Forests.

As to regulating the use of the range, it must be conceded that the Government owns the range and hence has the right to control it. Again, according to the dictionaries, the absence of government is anarchy. Those who advocate it should show why anarchy on the range is superior

to anarchy elsewhere. Experience is proving that government in the National Forests, as outside, is vastly superior to no government; the natural inference would therefore be that government on the range would be superior to no government there.

The need for regulation should be plain. Unregulated grazing is damaging and, in some cases, destroying the range, as unregulated use and abuse are damaging and destroying the forests.

Again, throwing a fertile range open to competing regiments or armies of cattle and sheep men is much like "throwing a banana to a cage of monkeys," or throwing open the Cherokee Strip to settlers. Civilization should have advanced beyond that method of distribution.

Further, government is necessary to the establishment of homes upon the land.

If the plans for regulation provided by the Burkett or Scott bills are objectionable, let the objectors suggest better plans.

Again, stress is laid (outside the editorial) upon the irrigation situation. Attention is called to the fact that the Government irrigates only on large projects; a multitude of small ones must therefore, if irrigated at all, be irrigated through private initiative. The private irrigator, usually a big stock man, and the small home owner, it is argued, work together under the non-governmental system in harmony; the big man furnishes the water, and the little one the crop, which he sells to the irrigator for winter feed. The lease system, however, with its long tenure, would justify the big cattle man in raising his own feed and would thus eliminate the home owner.

The obvious remedy for this difficulty is more Government irrigation. It is recognized that the present National irrigation works cost the country nothing; that it is maintained by a perpetually self-renewing, revolving fund; that what the Government pays out with one hand for reclamation work it takes back with another

through the sales of irrigated land. Such being the case, why should not this revolving fund be increased to any necessary amount, thus enabling the Government to irrigate not only a few great areas but a multitude of small ones? No question is raised over the protection accorded the home owner on lands irrigated by the Government. Why have we not here then a complete solution of the home owner's problem?

The editorial in question praises the National Forest principle but condemns its operation. The administration, it claims, is defective; red tape abounds; subordinates are arbitrary, etc. The author, however, cannot expect blanket charges to be met. Let him specify, furnishing names, dates, and places.

If the National Forests are to be successfully administered, the local viewpoint must, of course, be understood. The same principle applies to the successful national administration of the public range. Why may not provision be made for the establishment of some State advisory board or commission, with which the responsible forest officers in each state might keep in touch?

The editorial voices the familiar view that public lands should, with rare exceptions, be converted as promptly as may be in private property. The time has come when the Nation should think twice before accepting this dictum. The fact that it has acted upon it in the past is no proof that it should continue to act upon it. The pell-mell haste with which we have rushed to convert our public domain into railway empires, and otherwise to enrich vast corporations at the expense both of the public as such and of the man to whom home-owning has now become impossible, should warn us against future progress in this direction. It is instructive to contrast the ease with which public lands have been made private with the enormous difficulty, now illustrated by the Appalachian campaign, incurred in the endeavor to convert private lands into public.

The first process is like descending a toboggan slide; the second is like climbing back to the top of the hill and dragging the sled. The era of unrestricted private ownership has, let us hope, reached its culmination and begun its decline. Special pleas may still be made for the return of the "good old times"; but if the people are wise, these pleas will be made in vain.

Forests of Korea to be Protected Korea, the Hermit Kingdom, is waking up to the necessity of protecting its remaining forests and replanting denuded tracts on important watersheds. Japan is furnishing the inspiration and part of the money which will produce the change from the old order of things to the new. A school for training Korean foresters has already been put in operation.

The two governments drew up a co-operative agreement last spring and outlined a plan for the wise use of the forests in the Yalu and Tumen valleys and as a result a national forest policy for Korea has been developed. The new Korean forest laws are similar to those of Japan, according to United States Consul-General Thomas Sammons, of Seoul.

Although Korean forests have been exploited and neglected, and the country has suffered from drought, floods, and erosion, the denudation is less serious than in neighboring provinces of China. One of the first measures to be taken up will be the preservation of such wooded tracts as yet remain. In order to do this, the government has taken all forests under its care, whether they are publicly or privately owned. The owners will not be deprived of their property without compensation, but the Government will regulate the cutting of timber, and in certain cases may prohibit all cutting on tracts which ought to remain timbered, "to prevent floods, droughts, landslides, and to preserve unimpaired the scenic attractiveness of places of public resort." All owners of timberland and all leaseholders are required

to report to the Government their holdings in order that the property may be listed and cared for. Failure to report within a year subjects the forest to forfeiture.

The forested area of Korea is about 2,500,000 acres, which is only one-tenth of the land on which forests ought to be growing. Extensive timbered tracts remain in the Northern part of the country on the waters of the Yalu and Tumen Rivers, and lumber operations are carried on in the mountain districts. But in the agricultural sections of the country wood is very scarce and the fuel problem is serious. Coal and other mines have been opened by Americans, and one of the most pressing needs is timber for use in and about the mines. In that country, as elsewhere, large quantities of timber are necessary in developing mining property, and it is noteworthy that a country as backward industrially as Korea can put into practice the principle that the only sure way of getting timber is to grow it.

Nominate Members

A study of the statistics of the membership campaign of the American Forestry Association shows that few, if any, lists are better for solicitation purposes than the list of nominees sent in by members of the Association. These names are evidently carefully collected and yield, on the whole, excellent results. We again earnestly urge our membership to aid the work of the Association by sending in names of possible members for the use of this office. A large and growing membership adds greatly to the prestige and power of this organization. It furnishes funds with which to prosecute the work, and it raises up a body of friends everywhere to sow the seed from which the ultimate harvest may be reaped.

On the advertising page opposite the table of contents will be found a form entitled "NOMINATIONS FOR MEMBERSHIP." Post-office regulations curtail the blank space; nevertheless, by pasting on a sheet of paper it may

be indefinitely enlarged. Let each member faithfully use this form and send in the names of all, whether few or many, whom he may believe would be willing to join the Association. And wherever possible let him use his personal influence with these to encourage, or even urge them to join. A few earnest, aggressive, working members, soliciting memberships can very materially aid the progress of the organization. The existence of the present industrial stringency necessitates increased activity on the part of our friends. Let the nominations pour in.

Trust to be Probed

The announcement is made that the Bureau of Corporations intends to devote much attention during the coming year to the "Lumber Trust;" and the further statement is given out that the fireworks may be looked for at almost any time now. For more than a year past the Bureau has been conducting preliminary investigations and searching into all the conditions of the lumber business, and now active work, it is said, is ready to be put under way.

Within the next few weeks the Bureau will put a large force of men into the field, to reach all the lumber regions and the important trading centers of the country, and these men, specially trained for the work they will have to do, are to investigate right on the ground the conditions of the lumbering industry and the various and multitudinous correlated industries.

In the preliminary inquiry the Bureau has already given a liberal lumbering education to the men who will act as special agents, and these men have been for a year or more trained into the essentials, so that they will be able to go about their task in an intelligent manner.

The coming report, which may require two or three years in compiling, will, it is believed, be the most voluminous and the most important contribution to the literature of forestry—

commercially speaking—that has ever been made. Among the questions covered will be: Destruction of the forests; the necessity for stopping this proceeding, the extent of reforestation work in progress, the means necessary for the encouragement of reforestation; in addition to which the report will cover such grounds as the purely commercial aspect of the matter, operations of the lumbering business, relations of railroad rates to lumbering, and of water transportation to railroad rates; the making and maintenance of prices, average and actual cost of lumber production, and profits of the business.

It will be seen from the above that the probe is to be thrust deeply into the lumbering industry, and the resulting report is certain to be of very great interest and value to everyone concerned, whether he be engaged in lumbering, or merely interested from the standpoint of one who is affected by the increasingly grave conditions that are touching more and more closely all Americans and every branch of American industry.

Government Among the recommendations of the Senate **Try Siber-** dations of the Senate **ian Legumes** Committee on Agriculture, in reporting the Agricultural Appropriation Bill, was one to the effect that \$10,000 be appropriated for the purpose of importing hardy forage plants from Siberia, such plants to be tried on the northern portions of the great plains areas. This is in addition to a recommended appropriation of the same amount, to be used in co-operation between the Department of Agriculture and the Reclamation Service in demonstrating the possibility of crop production on lands under the latter service. In its report the Committee said:

"The great need in all these regions (the northern plains areas) is for leguminous crops which will serve not merely to maintain normal husbandry, but to build up the soil, which otherwise will be utterly depleted by the single-crop system now in vogue."

On several isolated, and relatively small, sections of the areas mentioned, experiments have already been made with one or more of the Siberian vetches; but these experiments have not been particularly successful, as a whole, although a measure of success has been attained in securing profitable stands of vetch. It is well known that the steppes of Siberia produce other legumes that are extremely valuable for forage; and it is also well known that these forage crops bear the long, hard winters of Siberia with no apparent ill effects. The question of over-grazing is one that has not, as yet, affected Siberia to any appreciable degree; and just how well these high-latitude forage legumes will stand transplanting and American grazing methods is problematical. However, it is certain that the native grasses have been so closely grazed—practically to the point of extermination—that some forage crop will have to be sown, if grazing is to continue as a profitable business. With an appropriation even as limited as the one recommended by the Senate Committee on Agriculture, a start can be made toward replacing grasses that are gone with a vigorous forage that may be adaptable to the conditions that exist over the northern portions of the range States.

**Startling
Words of
Timber
Expert**

Ridicule of all sorts has been heaped upon Gifford Pinchot for his expressed opinions as to the quantity of merchantable timber remaining in the United States, and persons and publications having absolutely no knowledge of actual facts and conditions have waxed funny at the expense of the Forester and his published expressions as to the imminence of a universally disastrous timber famine. It is interesting to know that men fully acquainted with the facts share Mr. Pinchot's views on this question, and that some of them are willing to risk their professional reputations by going further than Mr. Pinchot felt safe

in going, in calling attention to the danger that confronts the country. We have been handed the following letter from William J. Wallace, a timber expert, of Duluth, Minnesota, which we commend to the careful attention of our readers:

"Having spent the past twenty years in estimating timber in different parts of the United States, I have had a fair opportunity to study the general timber situation and will say that the problem of forest preservation and reforestation is one that should interest every citizen of this country.

"It is safe to say that timber values have doubled in the United States in the past five years, and with the increased demand and the decreased supply, it must be plain to every thinking man that if reforestation does not take place it will only be a few years until the price of lumber will be beyond the reach of the common people.

"When Mr. Pinchot makes the statement that the forests of the United States will only last twenty-five years, I consider he has placed the time limit too far away for the remaining timber supply east of the Rocky Mountains.

"Take the State of Minnesota, for instance. Eighteen years ago, when I made my first trip to this locality, Minnesota, Northern Michigan and Wisconsin were, generally speaking, virgin forests. To-day the pine timber of Michigan and Wisconsin is practically a thing of the past, and the remaining timber, the hardwoods and hemlocks in those States, that the early lumbermen considered worthless, has become valuable because of the scarcity of timber and the greatly increased demand. The railroads of these States to-day are using hemlock and birch ties, which a few years ago were considered worthless. When the lumbermen get through in Minnesota, there will be even no worthless timber to fall back on, for the reason that nearly all of the logging done in this state at the present time is done by logging railroads, and all the timber that will measure 5 inches at the top end is cut into sawlogs, regardless of kind and qual-

ity. One by one the lumber companies are exhausting their present supply of timber, and it is safe to say that in less than fifteen years the great lumber industry of this section of the country will be past history.

"As we have no reliable figures, at this time, as to the amount of the remaining timber stumpage left in the United States, only those who have studied the situation are in any position to judge how long our forests will last. There is going to be a great increase in the consumption of timber in this country, and I think it will be safe to say that as much timber will be consumed in the next fifteen years as was consumed in the past twenty-five; so it is my opinion that if reforestation is not made a part of the business of the Government, State, corporation and private interests in the next few years, we will have a timber famine which will cause financial embarrassment to a great many of our industries.

"We know what has taken place in the states of Minnesota, Wisconsin and Michigan in the past twenty-five years, and with the increased demand, how long will the remaining forests east of the Rocky Mountains last? Billions of feet of timber have been cut in the last ten years in the southern states, and there are millions of acres of land there with no timber on it. The original stand of timber per acre of the Michigan, Wisconsin and Minnesota forests would, as a whole, average at least three times that of the southern forests, and I certainly believe that twenty years hence ninety per cent of the remaining timber of the United States will be west of the Rocky Mountains, and ninety per cent of the demand for the same will be east of the Rocky Mountains, so that the average freight rate added to the value of the western stumpage twenty years hence would give one some idea of the value of timber stumpage in any of the states east of the Mississippi River, if reforestation does not take place.

"There may be large forests of timber left in Canada, but we cannot fig-

ure on that, as Canada has already stopped the export of pulpwood and sawlogs to the United States; and if there is going to be a shortage in the future timber supply, Canada will certainly prohibit the export of timber products. So, therefore, it should be plain to all that the only remedy is forest preservation and reforestation.

"The largest corporation consumers of timber in the United States to-day are the railroads and mining companies, and reforestation should be as much of their present business policy as any department they have. If a substitute for a wooden railroad tie is not discovered, what will be the future of railroad stocks and bonds when the timber is exhausted? Very few corporation officials know anything of the general timber situation, nor do they know that timber can be planted at the present time, a small rate of interest charged against the investment, and with the present methods of creosoting and preserving a perpetual timber supply can be obtained at about the same cost as they are now paying. If every large corporation consuming timber in any quantity would set aside a small per cent. of its net earnings and invest in tree planting for its future use, it would greatly add to the value of such corporation's assets, and in a few years such corporations could say, 'we have a perpetual timber supply at a small cost and the public is safe in buying our stocks and bonds.'

"In my opinion every railroad in this country at the present time should have a tree growing for every two ties it

have in its roadbed, so as to allow something for timber destroyed by wind and fire.

"A census of the remaining timber supply of this country should be taken as near as possible every five years, without incurring too much expense; also a census each year of the number of trees planted by the Government, state, corporation and private interests, so that the public would know what progress is being made.

Respectfully submitted,
W. J. WALLACE."

Engineering Experiment Stations

It is evident that larger and more definite provision should be made for technical and scientific investigations at the Land Grant Colleges. The resources of the country should be properly developed and carefully and economically utilized. Much information is needed to make this possible. The prevention of waste of our forests, our sources of power, our fuels, our minerals, our materials of engineering and manufacturing and our labor need most careful and accurate investigation. The economical and safe use of materials, energy or processes can not be assured without continuous experimentation relating to the strength and durability factors of all materials entering into engineering structures or into manufacturing processes. It is more rational to invest money for facts at the start than to try to subsidize industries which need fundamental investigations—*The Industrialist*, Kansas Agricultural College.

SPECIAL NOTICE—In order that copies of the June issue of "Forestry and Irrigation," containing the complete story of the great White House Conference, may be as widely distributed as possible, a special low price has been made on such copies when ordered in numbers. All readers of this magazine, members of the Association, and friends of Conservation, are urged to take advantage of this special low price. See announcement in the advertising pages.

AMERICA'S GREATEST IRRIGATION SCHEME

BY

Agnes Dean Cameron, Vice-President Canadian Women's Press Club

Irrigation was practised on this continent long before the discovery by Columbus or the conquest by Cortez. The Indian was the first water-farmer, and the Canadian has the biggest irrigation scheme in America today. The scene of this gigantic project is in the new province of Alberta, where the Bow River sparkles through the cattle country of the Canadian foot-hills; in that great region where the peoples of all the earth are building up a Nation of the Plains, the country which claims the dual name of the Sirloin of Canada and the Bread-Basket of Britain.

EXPLODED THEORIES

The application of water to lands other than those which produce fruit has upset many theories of merchant, manufacturer, and agriculturist. These used to join in considering the large farm the only farm really worth while; now all three unite in the verdict that on every irrigated area a hundred farms of ten acres each will produce nearly a hundred times as much business as one farm of a thousand acres.

It is now an exploded theory that the advantages of irrigation are restricted to the hot, arid countries of the South. Irrigation is by no means confined to areas where the rainfall is so scant that nothing will grow without it. On the contrary, in many countries where irrigation has been brought to the highest state of perfection, the natural rainfall is very heavy. For example, the States of Iowa, Wisconsin, Illinois and Ohio, and the provinces of Ontario and Quebec, are generally supposed to be am-

ply supplied with rain and snow, and able to produce excellent crops under ordinary culture without the artificial application of water. Yet, in all of India, except the northwestern part, throughout China, Japan, Siam, Italy, France, and Mexico, where millions of acres are brought under irrigation, the rainfall is quite as heavy as in the States and Provinces mentioned, namely, from 23 to 51 inches per annum.

The average rainfall during the past ten years in the Provinces of Alberta and Saskatchewan, where irrigation by gravity is practised, is as follows: Calgary, 17.69 inches; Macleod, 13.18 inches; Medicine Hat, 15.83 inches; and Swift current, 16.40 inches. The average rain-fall of the State of North Dakota is somewhat less, being over 10 inches, but under 20 inches per annum.

DEVELOPMENT OF THE WATER IDEA IN CANADA

When the construction of the Canadian Pacific Railway was pushed across the Great Plains region of western Canada, in 1882-83, scattered settlements followed closely in its wake. By the time the line had reached the foothills of the Rocky Mountains, some of these settlements had been established in what is now the southern portion of the provinces of Alberta, and from them the cities of today have grown.

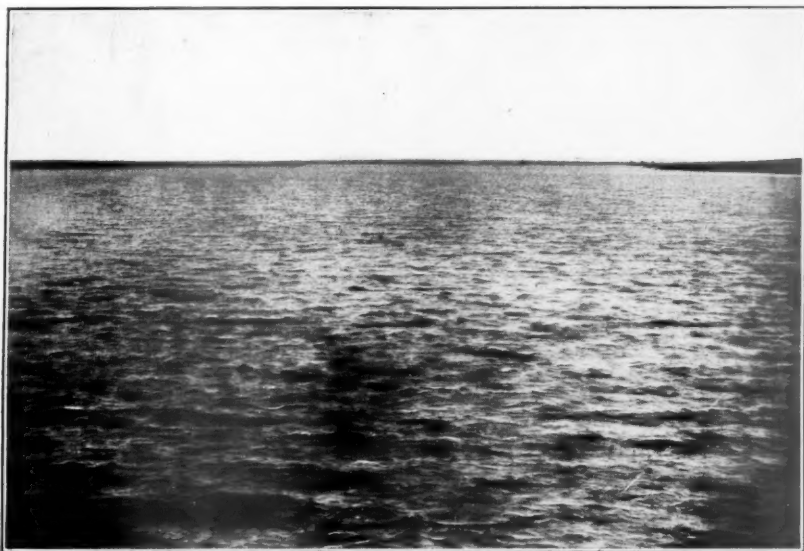
For many years stock raising was the only occupation of these settlements, the country having been found specially adapted to the grazing at large of cattle, sheep and horses during the whole year. But, by degrees,

small areas of land were brought under cultivation, especially in the valleys along the many streams, and this fact proved that the country during seasons of sufficient rainfall was well adapted to the growth of grain, vegetables, and fodder crops.

A series of dry years, commencing in 1892, with consequent crop failures, turned the attention of the settlers to the possibility of aiding the growth of their crops by irrigation. Such marked success followed their efforts

of the water supply available, and the location of the areas where such water could be used to the best advantage.

In considering the possibilities of irrigation in northerly latitudes, bear in mind the fact that the State of Montana, where the conditions are almost identical with southern Alberta, raises more agricultural products under irrigation than the States of Oregon, Washington and Wyoming combined; as much as the State of Utah, and half



AMERICA'S BIGGEST IRRIGATION SCHEME

Reservoir No 1, Canadian Pacific Railway's Irrigation Plant, Calgary

that general attention was directed to this method of extending settlement and insuring crop production.

The question finally assumed sufficient importance to warrant its being taken up by the government, and, after careful consideration, and examination of existing conditions in the irrigated States to the south, a well considered and comprehensive law relating to the use of water for irrigation was passed, a system of general surveys undertaken to determine the source and vol-

as much as the State of Colorado. Enormous irrigation development is now taking place in northern Montana, by and under the direction of the United States Government, which will place that State in the front rank of irrigation countries. In fact, unmistakable evidence is visible on all sides to the effect that the largest area of irrigable lands in America will presently be found among the rich agricultural lands of northerly latitudes, under semi-humid climatic conditions.



"Roast Beef of Old England" in the Raw

The area included in the Canadian Pacific Railway Company's irrigation project comprises a block of three million acres situated east of Calgary along the main line of the company's railway.

The block is an open prairie plateau with a general elevation near its western boundary of 3,400 feet above sea level, and slopes rapidly to the east until the elevation of 2,300 feet is reached at the eastern boundary. The surface throughout is more or less rolling until the eastern section is reached, where large areas of almost level plains are found. The whole block produces a most luxuriant growth of nutritious grasses.

Probably the most striking way of illustrating the magnitude of the area embraced in this irrigation block, is to offer some comparative facts. It is larger than the States of Connecticut and Rhode Island combined. It is twice as large as the province of Prince Edward Island. It is one-eighth the size of England and Wales; about the same size as the Hawaiian Islands, and twice the size of the island of Porto Rico. Fully half of this block is embraced in the company's present scheme of reclamation.

In developing the scheme the block has been divided into three sections, western, central and eastern, of about one million acres each; and the work is being carried on along the lines of development of sections, in the order named.

In the western section about 350,000 acres are to be brought under irrigation, and the following brief description of the works to supply water for this area will indicate the character and magnitude of the undertaking.

The water is diverted from the Bow River at a point about two miles below the city of Calgary. From there it is carried south and east through a main canal seventeen miles in length, which is sixty feet wide at the bottom, one hundred and twenty feet in width at the water line, and carries water to a depth of ten feet.

This main canal delivers water to a reservoir, for which a natural depression has been utilized; and where, by the erection of a dam, a body of water three miles long, half a mile wide, and forty feet deep, has been created.

From this reservoir the water is taken out in three secondary canals and carried to the different districts which are to be irrigated. These secondary canals are about thirty feet in width on the bottom, at their western end, and carry water to a depth of eight feet; their combined length being one hundred and fifty miles.

From these secondary canals the water is again taken out and conducted in each irrigation district through a comprehensive system of distributing ditches that bring the water to each 160 acres, or quarter section, of land to be irrigated. The combined length of these distributing ditches is about 800 miles.

To complete the western section, eight and one-quarter million cubic yards of earth must be moved.

The ultimate expenditure on this great undertaking is estimated at about \$5,000,000; which, taken in conjunction with the area of land in the block that it is proposed to irrigate, justifies the title given this scheme: "America's Greatest Irrigation Project."

The manner in which the work is being performed is vouched for in the following statement by Dr. Elwood Mead, late chief of Drainage and Irrigation Investigations, Department of Agriculture, Washington, the leading irrigation engineer authority on this continent:

"The chief problem of the main canal was to build a waterway which would be free from leaks and all danger of breaks. The precautions which have been taken to insure this are greater than those usually observed. The specifications for stripping the surface soil and packing the embank-

"Britain's Bread Basket"



ments are vigorous, and are being lived up to in all the work I inspected; and I have never seen more compact or uniformly solid banks than those being built.

"The soil of the irrigable areas is fertile, and well suited to the application of water. Taken in connection with the productiveness of the contiguous pasture land, it is certain that the cultivation of irrigated areas will be highly profitable, and will insure the creation of a large and prosperous agricultural community. The water supply is ample, and the rights of the company thereto are secure. The laws of Canada for the acquirement of water titles are equalled by few countries in the world in the specific character of the rights granted and the subsequent protection afforded appropriators. The filings in connection with the control of the land to be watered give the company a security and a freedom in carrying out its plans which is altogether exceptional."

CANADIAN WATER LAWS

The law of Canada concerning the rights of water-farmers has been declared by resolution of the American Irrigation Congress to be far in advance of any similar laws in the United States, and the Irrigation Office of the Department of Agriculture at Washington has issued a special bulletin calling attention to the good features of the Canadian law, and setting it up as a pattern which should be adopted by States within which irrigation is practiced.

The Canadian law is based upon the following broad principles:

- (1) That all water is the property of the Crown.
- (2) That applicants for the right to construct irrigation works must complete them within a stated time, and to the satisfaction of government engineers.
- (3) That the amount of water to be supplied for any given area (at

present one cubic foot per second for each 150 acres), and the irrigation season (May 1 to October 1) during which such water must be supplied, shall be fixed by the government, and not left to the whim of any irrigation company or person selling water for irrigation.

(4) That all agreements for the supply of water for irrigation must be registered with the government.

(5) That any disputes regarding the division or distribution of water are settled by the government officials without the necessity of any appeal to the courts or bill of costs to parties making complaint.

(6) That parties complying with the provisions of the law, and granted the right to divert water, obtain a patent direct from the Crown for the water, which they can carry in their pocket, if they wish, as prima facie evidence of their title, and that any attempt to interfere with such title is prevented by government officials without cost to owners of the water patent.

The best proof of the fairness and stability of the Canadian law relating to irrigation is the statement that although irrigation has been practiced for ten years, and today in southern Alberta there are, including the Canadian Pacific Railway's project, eight hundred miles of canals and ditches carrying water for irrigation, there has not during that time been one law suit about water rights.

The canal constructed by the Canadian Pacific Railway Company has an absolute title under the Canadian law to two thousand cubic feet of water per second from the Bow River; and that river at the point of intake for the canal has never shown at its lowest stage, since government guaguings were commenced some years ago, a smaller flow than three thousand cubic feet per second. During the irrigation season the flow usually averages about six thousand cubic feet per second.



THE CALGARY SCHEME
Headgate of the Main Canal of America's Biggest Irrigation Works, in the Canadian Northwest

The source and volume of the supply are therefore assured, the title to the water is as good as the title to the land, and in addition the purchaser of an irrigated farm gets the guarantee of the Canadian Pacific Railway Company to supply him with water for all time.

This is the first time on the continent that water has been supplied for irrigation under such an absolute title and with such a guarantee.

SOIL OF THE BOW VALLEY

The soil throughout the whole of the irrigation block is first class, with a heavy black loam and clay subsoil in the western portion, and a lighter sandy loam, with good subsoil, in the more easterly parts.

Professor Shaw, editor of the *Orange Judd Farmer*, says:

"The first foot of soil in western Canada is its greatest natural heritage. It is worth all the mines in the mountains, from Alaska to Mexico, and more than all the forests from the United States boundary to the Arctic Sea, vast as they are. And next in value to this heritage is the three feet of soil which lie underneath the first. The subsoil is only secondary in value to the soil, for without good subsoil the value of a good surface soil is neutralized. One acre of average soil in the Northwest is worth more than twenty acres of average soil along the Atlantic seaboard. The man who tills the former can grow twenty successive crops without much diminution in the yields, whereas the person who tills the latter must pay the vendor of fertilizers half as much for materials to fertilize an acre as would buy the same in the Canadian Northwest, in order to grow a single remunerative crop."

CALGARY'S CLIMATE

"What is the climate like?" is a question which intending settlers in the irrigation block are sure to ask.

The winter in south Alberta is a season of bright sunny days, broken by short intervals of cold weather; with long spells when the western chinook winds bring almost summer temperatures. The snow fall is so light that as a rule wagons are used throughout the year, and the snow disappears entirely two or three times during the winter under the influence of the warm chinook. During February and the early part of March brief periods of cold weather are usually experienced, but from one month to six weeks of winter is the limit.

The marked characteristic of the climate of southern Alberta is the "chinook" wind, which is a warm, dry wind, blowing across the plains from the Rocky Mountains which bound the province on the west. This wind has the peculiarity of melting and drawing up the snow in winter seasons with amazing celerity, and to its influence may be ascribed the fact that southern Alberta has many times celebrated midwinter holidays with cricket, baseball, and other outdoor sports.

CROPS AND MARKETS

What is raised on the big water-farm? First is the never failing crop of stock, consisting of horses, cattle, sheep and hogs. The hackney carriage horses which took first prize at the Montreal and New York Horse Fairs were foaled and raised near Calgary.

The winter wheat grown in southern Alberta was awarded the first prize and gold medal at the Lewis and Clark Exposition, Portland, 1905, in competition with wheat of that variety grown in Washington, Oregon, and Idaho. Timothy, alfalfa, bromus and all fodder grasses do well and yield heavy returns. The sugar beet is produced in abundance, and of an exceptionally high quality, as will be noted from the fact that the average of purity and saccharine quality of the sugar beets raised in Alberta is: purity 80 per cent; and saccharine content, 16 per cent.



ALBERTA TIMBERLANDS
Lumbering in the foothills west of Calgary

The following statement from the Government Crop Bulletin for 1905 will be of interest as showing the *average* yield of grain in the Calgary district:

Wheat (spring)	33.92	bushels per acre
Wheat (winter)	32.18	" " "
Oats	43.41	" " "
Barley	32.01	" " "
Flax	28.64	" " "

Southern Alberta is favored in the matter of markets for its produce, situated as it is alongside the great mining and lumbering districts of her sister province of British Columbia, and

having the shortest and most direct outlet to the great markets of Yukon, Alaska and the Orient by the port of Vancouver. A steady and never failing market already exists for its general produce; and prime beef for many years has gone eastward across the continent to Great Britain.

Nature has done much for the rolling mesas of the Canadian foothills. It needs but man's enterprise and initiative to convert into a region of happy homes these erstwhile sites of Indian raids and old wallows of the buffalo.

IMPORTANT ANNOUNCEMENT

The June number of "Forestry and Irrigation" will contain the most complete account of the White House Conference, to be held May 13 to 15, inclusive, to be found anywhere. This report will be the live, crisp story of the greatest gathering of public men that has ever been held in

America. A special price has been made on copies of the June number, when ordered in quantities. Attention is called to the advertisement on another page, and all members of the American Forestry Association, and other readers of this magazine, are urged to take the fullest advantage of this offer.

WASTE OF NATURAL RESOURCES AND NEED FOR CONSERVATION

BY

Mrs. Lydia Adams-Williams, Member of the Women's National Press Association

FOR years and years and years, with that prodigality which ever characterizes those richly endowed, we have like profligates wasted and thoughtlessly destroyed the vast and apparently unlimited store of natural resources which a wise and beneficent Providence has placed at our disposal.

Facing the firmly established fact that in the space of a short half century our population will have increased to at least 150,000,000, and with the incontrovertible evidence that our natural resources are rapidly dwindling, the American people, with our indomitable President, Theodore Roosevelt, in the lead, have at last awakened to a realization of the enormous and dangerous waste. Further, the truth has been brought home that upon the fundamental basis of our natural resources rests the continuance of our unprecedented prosperity and phenomenal progress, and our power to advance the cause of humanity the world over.

With the view of comprehensively planning the most efficient means of utilizing and preserving our varied resources, a number of Government bureaus have been created, each one of which deals with a specific branch of the subject.

The United States Reclamation Service, which was created in 1902 to carry out the provisions of the Reclamation Act, has for its especial field the building of reservoirs and canals whereby the floods may be stored and the waters let out over the thirsty land, thus reclaiming the desert by irrigation, and providing homes for thousands of tillers of the soil.

The funds available for building are

derived from the sale of public lands in the States where reclamation work is done—both agricultural and mineral lands, and from water rights as these are progressively developed. During the twelve months ending June 30, 1907, \$25,248,641 were expended. During the present fiscal year not so much is to be expended, as the fund originally in hand has been largely reduced by the work already done. It will be replenished by the sums received from settlers, but these will not be turned over to the Reclamation Service until the end of the fiscal year. The estimates for the year ending June 30, 1908, amount to \$12,391,214; and for the last half of 1908, some four or five millions more.

At the present time about 250,000 acres of arid land have been reclaimed, and by 1910 the number of acres of irrigated land is expected to be 1,600,000. This area is equal to 80,000 farms of twenty acres each; or homes for three to five hundred thousand people.

Works practically finished are the Minidoka project in Idaho, the Umatilla project in Oregon, the Belle Fourche in South Dakota, the North Platte in Nebraska and Wyoming, the Shoshone in Wyoming, the Garden City in Kansas, the Huntley in Montana, the Carlsbad in New Mexico, and the Truckee-Carson in Nevada; of works which are under way, the largest now in hand are the Roosevelt dam in Arizona, the Gunnison tunnel in Colorado, the Shoshone and the Pathfinder dams in Wyoming, the Strawberry tunnel in Utah, and the Laguna dam between Arizona and California.

The National Drainage Association

is organized to further legislation whereby the large area of swamp land in the United States may be drained and reclaimed under the supervision of the Reclamation Service. The average cost of draining the swamp lands is \$5 an acre; and the 80,000,000 acres of these lands, in the various States from Maine to California, if drained, would furnish homes of 100 acres each for 800,000 families, or some 4,000,000 people; or farms of 20 acres each for 4,000,000 families, making 20,000,000 people.

In appointing the Inland Waterways Commission, the President planned for a comprehensive study of the vast inland chain of rivers and lakes, with a view of developing and utilizing these great waterways, thus opening the channels of trade and extending commerce in some forty of our richest and most prosperous States. A fourteen foot channel, as proposed, from the Gulf to the Great Lakes, would relieve the railway congestion, by taking over the bulky and non-perishable commodities of freight, and open the way for the fullest utilization of the benefits of the Panama Canal.

We speak of the mineral wealth of the West. But the gold, the silver, and all the products of the mines in the Rocky Mountains do not equal in value the waters flowing from those mountains, and practically all unused. Running to waste over Government dams, year after year, are 1,600,000 horse power, one of our greatest National assets.

Not being controlled, the water is free to come down in the wet seasons in floods. The damage from floods in the country is over a hundred million dollars a year. We shall have reached the ideal condition when we manage and control our rivers and streams as a city manages its water mains and hydrants; when, at the head-waters of our navigable streams are reservoirs of sufficient capacity to hold all the waters of the severest floods, so that we can shut off or let on at will any volume of water, thus maintaining an

equal flow and a required depth for navigation, and furnishing an assured supply for power plants, municipal purposes and irrigation, as well as preventing floods and droughts.

There is an enormous and dangerous waste in the using of our mineral fuel resources.

For instance, the railroads annually burn 150,000,000 tons of coal, of which only 5 per cent of the potential power residing in the coal is actually used; the other 95 per cent. being lost by wasteful mechanical methods. In the best incandescent electric lighting plants one one-fifth of 1 per cent of the potential power in the coal can, under our present methods, be converted into light.

If the rate of consumption of coal continues to increase hereafter as it has increased in the last ninety years, and there is reason to believe that it will do so, the anthracite coal will last about fifty years, and the bituminous coal a little over 100 years.

The consumption of coal by decades is as follows:

	SHORT TONS
1816 to 1825	331,356
1826 to 1835	4,168,149
1836 to 1845	23,177,637
1846 to 1855	83,417,825
1856 to 1865	173,795,014
1866 to 1875	419,425,104
1876 to 1885	847,760,319
1886 to 1895	1,586,098,641
1896 to 1905	2,832,599,452

As shown by the above figures the amount consumed in any one decade is equal to the entire previous consumption. This rate, if continued, means an increased consumption that no supply, however great, can withstand for many years.

The total tonnage of coal in the United States, exclusive of Alaska, is 200 billion tons. This amount of coal would form a cube seven and a half miles high, seven and a half miles long, and seven and a half miles broad; or it would form a layer of coal six and a half feet thick over the entire area of the coal fields of the United

States, 400,000 square miles in extent. Surely such a supply seems inexhaustible, and if the rate of consumption of 1905 were continued indefinitely without change, our coal would last approximately 4,000 years, but at the constantly increasing rate of consumption which has marked the past century, our coal will be practically exhausted within one hundred years.

The policy of the Government which, when the years have told their story, will be perhaps the most far-reaching of all, is that embodied in the National Forest Service; for the proper use of nearly all our other resources undeniably depends upon the forests.

The Forest Service estimates of the timber now standing in the United States, compared with the present rate of consumption, show a probable exhaustion of our timber supplies in a little over thirty-three years. These facts should convince the most skeptical of the immediate and vital necessity of using every means within our power to prolong the life of our forests.

That a realization of the truth is being brought home to us, is shown by the newspapers of the country. Says the Chicago *Inter-Ocean*: "One of the noteworthy signs of the times is that the American people are at last becoming awake to the importance of forest preservation, and reforestation, and the work of the Government Forest Service."

The question which most concerns the people of the United States to-day is the conservation of the hardwood forests in the Southern Appalachian and White Mountain regions. Statistics prove that there are lean years ahead, and that many industries will be seriously crippled by the shortage of hardwood timber, and that some will have to suspend entirely.

If the trees go, the soil on which they grow goes too. Senator Depew is one of those who have pointed out this fact. Before the United States Senate in 1902, Mr. Depew said in the rhyth-

mic flow of eloquence to which his colleagues delight to listen:

"The results of an attack upon the Appalachian forests, created by Nature for the protection and enrichment of the people, is more disastrous than the sweep of an invading army of savages over a thickly populated and fertile country. They kill, they carry off captives, they burn, and they destroy; but after the war is over the survivors return to their homes, and in a few years every vestige of the ruin has disappeared. In its place there are again cities, villages and happy people. But the lumber man selects a tract of hardwood forest upon the Appalachian Mountains. The trees, young and old, big and little, surrender to the ax and the saw. Then the soil is sold to the farmer, who finds abundant harvest in its primeval richness. For about three years, he gathers a remunerative and satisfactory harvest, but he sees, as the enormous rainfall descends, his farm gradually disappear. At the end of three years, he can no longer plant crops, but for two years more, if lucky, he may be able to graze his stock. At the end of five years, the rain and flood have washed clean the mountain sides, have left nothing but the bare rocks, have reduced his farm to a desert, and created a ruin which can never be repaired.

"But this is not all. That farm has gone down with the torrents, which have been formed by the cutting off of the protecting woods, into the streams below. It has caused them to spread over the farms of the valleys and plateaus. It has turned these peaceful waters into roaring floods, which have plowed deep and destructive gulleys through fertile fields and across grassy plains. One freshet in the Catawba River, last spring, occasioned wholly by the deforesting of the mountains, swept away a million and a half dollars' worth of farms, buildings, and stock.

"Negligence of this kind on the part of Congress becomes almost a crime. Those wonderful woods should have

been preserved not for speculators and bogus settlers, but for the whole of the country. They would, under scientific forest management, have been for all time to come not only self-supporting and revenue producing, but they would have been more—they would have been the source of supplies of wood for all purposes, for all the inhabitants of all the country. They would have been additions to the rural scenery, which in every State and country, when attractive, helps culture

and civilization. They would have been the home of game, where sportsmen could have found health and pleasure. But, instead, the land will become an arid waste, the streams will dry up, and the country will lose not only one of its best possessions, but there will be inflicted incalculable damage upon a vast region which otherwise would have supported vast manufacturing and other industries, and which would have remained full of happy homes and cultivated farms."

THE SPENDTHRIFT

By Robert M. Reese, Washington, D. C.

I

Into my great inheritance
 I came when I was young;
 I spent it freely with both hands;
 I mocked, with jeering tongue,
 At those who sorrowfully said,
 "Beware! The end is near!"
 And, drunk with riches, shook my head,
 Regarding not their fear.

II

My squandered forests, hacked and
 hewed,
 Are gone; my rivers fail;
 My stricken hillsides, stark and nude,
 Stand shivering in the gale.
 Down to the sea my teeming soil
 In yellow torrents goes;
 The guerdon of the farmer's toil
 With each year lesser grows.

III

Lord! Of Thy bounty heedless still,
 My store of good I spend;
 Thy brimming cup I careless spill,
 Regarding not the end.
 My riches melt away like snow
 Beneath the April rain;
 And though my hand prepareth Woe,
 Yet may I not refrain.

IV

O stay my sinful hand and lend
 My faltering heart Thine aid,
 That these my spendthrift days may end
 And at Thy feet be laid
 The will to show the past retrieved,
 Thy gifts renewed, restored.
 That I have spent what I received,
 Thy pardon grant, O Lord!

NEWS AND NOTES

Widening Interest in Conservation From every section of the land comes indications of the ever-widening interest that is being taken, by people in every walk of life, in the problem of conservation. Organizations of all characters, associations of business men, lumbermen, chambers of commerce, granges, federations of women's clubs and scores of other larger or smaller associations of representative Americans, numbering in the aggregate hundreds of thousands of American men and women, have recently passed resolutions endorsing the conservation movement. FORESTRY AND IRRIGATION wishes it were possible to print all the resolutions along such lines that are received in this office; but to do so would be to take up the entire magazine and crowd out all other matter. However, we are printing herewith a few of the resolutions recently received, and mention of organizations that have endorsed the work of the Government along conservation lines.

Upholding the Government Following President Roosevelt's invitation to the State Governors to meet at the White House, Mrs. Lydia Adams-Williams, whose article on The Waste of Natural Resources appears elsewhere in this issue, addressed the District of Columbia Federation of Women's Clubs; and after her lecture the Federation adopted resolutions in support of the conservation movement. This Federation, comprising seventeen societies with 4,000 members, is the first among the Women's Club organizations to take action in this larger field. The resolutions are here reproduced:

Recognizing the incontrovertible fact, which has been too long neglected, that upon the fundamental principle of the conservation and development of all our natural resources, under the supervision of, and by the aid of the Fed-

eral Government, depends the continuance of our country's unequalled wealth, prosperity, and phenomenal progress, thus enabling us to advance the cause of humanity and civilization the world over, we heartily endorse and unreservedly commend the policy of President Roosevelt in his earnest efforts to preserve and develop all our natural resources.

To further augment the President's wise and beneficent policy, in utilizing our public lands and in securing the use of the water, the forage, the coal, and the timber for the public, we hereby pledge ourselves, individually and collectively, to assist by our pens and our influence, and to promote by all honorable means within our power, the branches of the United States Government devoted to these subjects, namely:

The United States Reclamation Service in its worthy efforts to reclaim the desert by irrigation and to build homes upon the land.

The Forest Service and the United States Forester, Mr. Gifford Pinchot, in his commendable plan to use and save the forests and to reforest the land, for "without our forests there would be no irrigation."

The Geological Survey in its efforts to utilize more economically the coal deposits which when once exhausted can never be renewed.

The Inland Waterways Commission with its plans for a fourteen-foot channel from the Gulf to the Great Lakes, thus relieving the railway congestion and opening new channels of trade and extending commerce in some forty of our richest and most prosperous States, and further preparing the way for our fullest utilization of the incalculable benefits of the Panama Canal.

And to further aid the United States Forester and the American Forestry Association by urging Congress to appropriate money for the purchase of the Southern Appalachian and White Mountain National Forests, that the numerous factories, power plants and other manufacturing industries, also the homes of hundreds of prosperous and contented tillers of the soil, may be saved from destruction by floods and droughts, of which the lowest estimate of yearly loss by flood alone is \$100,000,000.

And to aid the American Mining Congress in its efforts to open to homesteads and agricultural uses the mineral fuel lands, while still retaining their ownership by the United States for the benefit of the people.

And to further the work of the Drainage Investigating Committee, which plans to reclaim our eighty million acres of swamp lands, thus providing homes and tillable land for the 150,000,000 of people which a short half century will see within our borders.

To give all due publicity and aid to the Rivers and Harbors Congress which convenes at Washington, D. C., on December 3rd next; also to the Sixteenth National Irrigation Congress which meets at Albuquerque, New Mexico, in September, 1908; also to the Conference for the Conservation of Natural Resources, called by President Roosevelt, to meet at the White House, May 13, 14, and 15, 1908.

And again from the West comes a note of encouragement, when the Colorado State Forestry Association unanimously adopts the following preamble and resolutions:

"Believing that the movement, on the part of the friends of forestry, to establish National Forests in the White Mountains and the Southern Appalachian Range, is a matter of great moment and far-reaching in its benefits, not only to those adjacent to the regions affected, but to many material interests incident to our civilization and public welfare, and

Whereas, We desire to co-operate in every good work relating to forestry, and

Whereas, The people directly interested are appealing to the friends of forestry throughout the country to lend their influence and aid, Therefore

Resolved, That we, the Directors of the Colorado State Forestry Association, do hereby heartily endorse Senate Bill No. 2985, and House Bill No. 10457, now before Congress, and recommend their passage, and that ample provision be made for the purchase, by the United States Government, of the tracts described in the said bills; and be it also

Resolved, That a copy of the foregoing be sent to our Senators and Representatives at Washington, and that they be advised of our desire to have them support the measure and vote for its passage, and also that a

copy be sent to the presiding officer of both Houses of Congress, the Chairman of the House Committee on Agriculture, and the Secretaries of such Associations, as are interested in the enactment of this law."

The Eastern States Retail Lumber Dealers' Association, with a membership scattered throughout the entire eastern part of the country, recently met in annual convention in Washington, D. C. At the convention the following resolution was unanimously adopted, and copies of the paper were ordered sent to the President of the Senate, the Speaker of the House, and the Chairman of the Committee on Agriculture:

"Whereas: It has been demonstrated that the communities, situated along the many great rivers having their sources in the lower Appalachian and White Mountains, will in time to come suffer great damage and loss, and their industries be practically destroyed if prompt and judicious steps are not taken to protect the watersheds and properly preserve the timber upon the mountain slopes, and

Whereas, The estimates published by the Department of Agriculture indicate the rapid disappearance of our timber supply for which the country is now looking largely to the Appalachian forest.

Resolved, That we, the Eastern States Retail Lumber Dealers' Association, in convention assembled, submit to Congress the urgent necessity of adopting one of the measures now before the House of Representatives, having for their object the purchase of what is known as the lower Appalachian and White Mountain Forest Reserve."

The Los Angeles Chamber of Commerce has forwarded the following resolutions to California Representatives in Congress:

Whereas, The Los Angeles Chamber of Commerce has been most active, in the past, in furthering legislation looking to the preservation of forests,

forest reserves and watersheds in California, and

Whereas, The American Forestry Association is making an effort to have bills passed, now pending before Congress, looking to the acquirement of National Forests in the Southern Appalachian Mountains and White Mountains, and appreciating the vital importance of such legislation, therefore be it

Resolved, That the Los Angeles Chamber of Commerce hereby respectfully suggests that our representatives in Congress support H. R. 10457, introduced by Mr. Currier."

The Committee on Forests of the New York Board of Trade and Transportation, composed of Edmund Philo Martin, Peter E. Schofield, John H. Washburn, Lewis Nixon, William Jay Schieffelin, Clarence G. Stone, William F. Oatman, and Henry S. Harper, in submitting a report to the Board, recently said:

"The continued deforestation of these reliefs (the White Mountains and the Appalachian system) cannot, therefore, fail to work to the disadvantage of the great manufacturing and all other industries dependent upon the proper flow of their rivers and tributaries. When competition between the most advanced nations has not only reached a stage unprecedented in the history of the commercial world, but gives every indication that it will grow more severe, owing to the forceful and intelligent leadership of those engaged in this mercantile rivalry, no advantage, either acquired or natural, which any section of the country possesses, should be sacrificed or needlessly wasted.

"These observations have a special application to the region watered by the river system of the southern Appalachians. Raising such a large proportion of raw cotton, one of the most valuable gifts of nature to mankind, with a native population peculiarly adapted to its successful cultivation, a favoring climate, and with water and electric powers practically unlimited,

if wisely conserved and applied, its manufacturers should in time be able to wrest from the nations of Europe the cotton trade of the peoples and nations inhabiting the countries and islands washed by the Pacific Ocean, and now constituting more than half the population of the globe. Great as it is at present, it is insignificant, as to what it must be, when the East awakens from the lethargy of its ancient civilizations and enters upon the march of Western progress."

The Committee concludes with the following resolution, which was unanimously adopted by the Board:

"Resolved, That the New York Board of Trade and Transportation most heartily endorses the proposition to create the Southern Appalachian and White Mountain reserves, and requests the Committee on Forests of this Board to urge the passage of such one of the pending bills as in its judgment will best serve the public interests and prevent the diversion to private or corporate interests of the benefits to accrue from such forest reserves when created."

The Pomona Grange of Oregon has adopted resolutions demanding a change in existing laws concerning water rights, both for power purposes and irrigation, and the resolutions adopted call on every legislative candidate to make clear, in a public statement, just how he stands on the question of water preservation.

The Toledo, Ohio, Federation of Women's Clubs recently adopted resolutions declaring that the best interests of the country demand the conservation of natural resources—timber, water and mineral—and unqualifiedly endorse the plans for the Appalachian-White Mountain forest reserves.

The Association for the Protection of the Adirondacks, headquarters in New York City, in resolutions, expresses its earnest approval of the Appalachian-White Mountain bills and memorializes Congress to that effect. The memorial calls renewed attention to the danger that menaces the

eastern parts of the country from the effects of the progressive deforestation now and for years past destroying the woods, the waters and the soil of the whole region east of the Appalachians, and also, in almost equal degree, the regions lying on the other side of the mountains; and Congress is urged to take warning from the fate of the deforested countries of the Old World, so that steps may be taken to avoid in this country such conditions as now exist in the countries of Europe and Asia.

The Detroit New Century Club has heartily and unanimously endorsed the Appalachian-White Mountain bill, and has so written to the members of the House Committees on Judiciary and Appropriations.

The two House committees have also received letters over the signature of every prominent manufacturer in New England, these letters expressing the conviction that the proposed forests reserves should be established without further delay. The men signing these letters represent industries capitalized far up in the millions of dollars, and they are all actively engaged in business that is vitally affected by the conditions of streams rising in the mountains where it is sought to locate the reserves.

The following was adopted by the National Executive Board of the D. A. R., at the convention in Washington, in April:

"Recognizing that a timber famine is almost at hand; also that the health of the people, and that water power for navigation and for vast manufacturing interests; also that electrical energy for heating and lighting our homes and for culinary purposes; also that the conservation of the natural resources of the country, are all dependent upon the preservation of the forests,

Resolved, That the National Society of the Daughters of the American Revolution unqualifiedly endorse President Roosevelt's far-sighted policy of conserving all the natural resources, including the forests, and that

we will use all honorable means within our power to further the passage of the bill now before Congress, which provides for acquiring national forests in the Southern Appalachian Mountains and White Mountains."

Floods

The flood season is again on. Spokane dispatches of March 16 reported the Coeur d'Alene at three feet, and dwellings along the entire length of the St. Joe abandoned, the people taking to the uplands. All docks had been washed away, and rain was still falling in sheets. Lewiston, Idaho, was isolated, and more than two miles of track and many bridges were washed out on the line of the Potlatch Creek. The Pine Creek Lumber Company had lost a \$100,000 dam and more than 1,000,000 feet of logs. Other damage was reported. On March 19 the Monongahela and Allegheny were on the rampage, with the flood stage of thirty-three feet expected the following day. Merchants were moving their wares out of the danger zone. Railroad schedules were badly disarranged on account of numerous landslides. Eight miles of Pennsylvania passenger track were out of commission.

Contrast experiences like this with the statement of Chief Hydrographer Leighton, of the United States Geological Survey: "Our rivers should be controlled in much the same manner that we control city water."

The world is learning that what, in ignorance, it once assumed to be mysterious visitations of an inscrutable Providence are, in fact, effects which can be traced directly to causes which, in turn, can be removed. Diseases which once swept away thousands have been practically abolished. Distance is being largely annihilated by modern transportation facilities, and time, by modern methods of communication. Instead of continuing the plaything of omnipotent and merciless natural forces, man is learning to master his environment, and make of

these same forces his obedient and vastly serviceable slaves.

From the standpoint of those who know, floods are superfluous. There is no more need of the periodical inundation of great areas of fertile land, the sweeping away of mills, factories, railway tracks and residences, and the destruction of lives by river overflows than there was need for water pouring, at every rain, through the roof of the patient native interrogated by the "Arkansas Traveler." The up-to-date man mends his roof before the rain comes. When, as a nation, we get up to date, we will mend our river systems before the floods come.

No informed man claims that forests alone will completely prevent all floods. The forest, however, is a potent factor in flood prevention. Reservoir systems, well understood by engineers, are other factors. Here, as in the case of the roof and the pestilence above referred to, the remedy is incomparably less expensive than the disease. Which shall we have?

Disastrous Flood in China Two thousand persons were drowned at Hankow, China, on the night of April 12th, by a sudden freshet which swept down on the city and flowed over the dikes which protect it. The inhabitants asleep in their homes had but little chance of escape. Hankow is a city of 800,000 inhabitants, situated at the junction of the Han with the Yang-tse-Kiang, about 450 miles west of Shanghai.

The towns of Craig, Cascade, and Great Falls, Montana, were menaced by a flood that swept down the Missouri River on April 15, and great damage, as well as considerable loss of life, occurred along the course of the upper Missouri. The flood was caused by the breaking of the Great Hauser Lake dam, and this, occurring in the night, gave little opportunity for those exposed to the flood's fury to remove their household goods, their live stock, or, indeed, to save more than their lives. The impounded wa-

ters had been largely augmented by rains and by the rapidly melting snow from the mountain sides, and the structure of the dam was not strong enough to stand the added strain. The mountain slopes surrounding the Hauser Lake dam site have been practically denuded of forest growth, and there is nothing to prevent the melting snow and the excess rainfall from pouring directly and rapidly into the river and its tributary streams.

At Great Falls the Boston and Montana smelter, one of the largest in the world, was seriously damaged, while the flood loss along the entire upper reaches of the Missouri, from the breaking of the dam, runs far into the thousands of dollars.

Peat Briquettes for Mexico's Fuel

Word comes from the City of Mexico to the effect that an American company has undertaken the manufacture of briquettes from peat. The increasing difficulty of supplying the capital city of the Republic with wood from neighboring forests whence its fuel has come since the days of Cortez, has led to this project of utilizing deposits of peat which have long been known to exist in the vicinity.

Eighty years ago Humboldt described magnificent forests within reach of the City of Mexico. To-day the region supports only a second growth of little value. The change has been brought about by wood cutters and charcoal burners who have stripped the land and left it to reforest itself if it could, or to relapse into waste. Thus neglected, the land could not grow timber to meet the demands upon it, and the woodcutters have little or nothing near to cut.

Fortunately large bogs of peat are within reach. It has never been much used for fuel because the Mexicans never took pains to learn how to burn it. The company which has undertaken to manufacture the bog fuel into briquettes has made large investments in land and machinery.

Better Figures Soon Available

The average man usually has a very hazy idea as to the rapidity of growth of trees. In fact, until recently very little accurate information had been gathered which could throw light on this very important aspect of American forestry. The value of a forest is not merely the standing timber which it contains, but it includes also the power to produce a future crop. The study of tree growth has a very practical purpose, that of measuring this producing power of forests. It is only through this knowledge that the forester can determine whether or not forestry will pay.

To gather enough information to furnish complete figures of growth even for such of our trees as are at present of commercial importance, would be a vast undertaking and would involve a greater outlay of money than can at present be made. The United States Forest Service has, however, made a large number of local studies of growth which serve well as a first step in this direction. While the figures at present available are not claimed to be complete or final, they are of great use to foresters in working out problems of forest management.

In an old publication which has a large circulation among handlers of lumber is given a table showing the sizes of different kinds of trees at the age of twelve years. According to this table the diameter of a birch tree at this age is ten inches and its height twenty feet. The height is approximately correct, but the diameter given is several hundred per cent too high. The actual diameter would be from one to three inches, depending on the kind of birch, situation, and other factors. Again, silver maple is given a diameter of twelve inches, whereas the true size should be about three and a half inches.

The Forest Service is preparing for publication a "Preliminary Synopsis of the Rate of Growth of Forest Trees" in which is given a summary of the figures of growth so far obtained and worked up. The most important tree in each of the forest regions of the

United States are given, together with the sizes which they attain at ages of 30, 50, 80, 100, 150, and 200 years. While the figures for different species should not be compared too closely, they will admit of rough generalization which will be of considerable value.

Prize Winner Second Time

James D. Schuyler, of Los Angeles, the prominent hydraulic engineer, has achieved the distinction of being the first member of the profession twice to receive one of the principal honors bestowed by the American Society of Civil Engineers. This is the "Thomas Fitch Rowland Prize" given annually to the member or engineer who contributes the most noteworthy paper describing in detail accomplished work of construction. Mr. Schuyler, who is the author of a standard work on Dams, has been advised that he has received the 1907 award for his paper entitled "Recent Practice in Hydraulic-Fill Dam Construction," a contribution to science which has created a stir among engineers throughout the world. He had previously won the prize for his paper, "The Construction of the Sweetwater Dam."

Reports Successful Initial Year

The new School of Forestry at the University of Washington, Seattle, reports a successful initial year, and interest in the course is developing in a very satisfactory way. Eighteen students have enrolled in the School, nine of whom are in the full course. Although instruction in forestry has been given at the University since 1895 the work was not placed on an independent footing until the present year. Full announcement of the plans and aims of the School will be made in the catalogue, which will be ready for distribution by May first.

Three courses are outlined. One, a four year undergraduate course, designed more especially for those who wish to enter on a business career in some phase of the lumber industry, but who wish first to have the advantages of a university training; also for those

who expect later to enter the profession of forestry. Second, a two year graduate course, designed especially for those who expect to enter the profession of forestry. Third, a short special course of twelve weeks designed for forest rangers who wish to increase their efficiency, or for those who wish to fit themselves for ranger duties; also for logging superintendents, woodland owners and others desiring a general knowledge of the principles of forestry, but who do not have the time to enter on a full course in the subject. The United States Forest Service co-operates with the University in offering this short course and will detail experts to give several of the special subjects. The others will be handled by various departments of the University. This course will be given next year for the first time, opening Tuesday, January 5, and closing Friday, March 25.

The School has exceptional advantages in its location. The University campus comprises 355 acres, a considerable portion of which is in timber and offers splendid opportunities for field work in silviculture and forest measurements. Other excellent forests are within walking distance of the campus. The University also owns large forest tracts in various parts of the State, where students may conduct extensive research work. The immense National Forests, within a few hours' ride of Seattle, afford practical object lessons in the art of forest management. The city of Seattle is in the center of the timber industry of Washington and the Northwest. In its sawmills and wood-working industries, the student has unrivaled opportunities for studying wood utilization.

In 1905 the United States Government, through its Forest Service, designated the University of Washington as a government timber-testing station. A timber testing engineer and a corps of assistants are stationed there, and extensive scientific tests of the strength of western timbers are regularly carried on. Students of forestry are given the privileges of the testing

laboratory and have ample facilities for making investigations in the physical and mechanical properties of wood.

Prof. Frank H. Miller, for four years head of the department of forestry in the University of Nebraska, and who is a member of the U. S. Forest Service, is in charge of the new School of Forestry in the University of Washington.

Colorado Farmers Want Forests

At Longmont, Colorado, the farmers of that vicinity and the business men of the town and section have adopted resolutions

in favor of the Government control and preservation of the forests of the watershed of the St. Vrain Valley as a means of maintaining and regulating the flow of the streams which furnish water for irrigation.

The Fruit Growers' Association in the preamble to its resolutions declares that it is necessary for successful fruit growing in this section of the State of Colorado to have an abundance of late water for irrigation, and to secure such water they want the watersheds protected with trees.

How Can Irrigation Be Improved?

Gov. Albert E. Mead is considering a plan to ask the next Legislature of Washington to provide a State fund to be used, in co-operation with a like amount appropriated by Congress, for a study of the problems confronting water-users in various parts of Washington.

Mr. Samuel Fortier, who is at the head of the Government irrigation investigations, and was, till recently, stationed on the Pacific Coast, says:

"I do not think I am mistaken in stating that the economical use of the available supply in the arid and semi-arid portion of Washington transcends all others in importance. The object of our investigations is to produce the most valuable yields with the smallest amount of water."

Mr. Fortier quotes from a report by O. S. Jaynes, who is at the head of

irrigation investigations in the State: "The earlier ditches, and, in fact, most of the now existing ones, have been more or less carelessly built, while as a rule the methods employed in the distribution and application of the water have been such as to lead to needless extravagance and waste. As a result of the practices which have obtained, thousands of acres of land have been ruined by over-irrigation, while thousands more that might have been providing homes and producing wealth have been lying idle and worthless for lack of water."

**Manufac-
turers Take
Note of
Forestry**

On May 15th will occur in New York the convention of the National Association of Manufacturers. Forestry will be one of the chief subjects considered at this meeting. Preparatory to the meeting the organ of the association, *American Industries*, published in St. Louis, is making a special feature in each issue of one or other of the topics that are to be most discussed at the meeting. One such issue will be devoted to forestry.

**Mrs. Williams
to Speak at
Boston**

Mrs. P. S. Peterson, of Chicago, Chairman of the Forestry Committee, General Federation of Women's Clubs, has invited Mrs. Lydia Adams-Williams to speak on the topic "Waste of Natural Resources and Need for Conservation" at the biennial meeting of the Federation to be held in Boston in June.

**A Labor
of Love**

Col. Jos. H. Acklen, of Nashville, Tenn., serves his State as warden of the Department of Fish, Game and Forestry without compensation. The Department was created by the Legislature in 1905. Col. Acklen was appointed for eight years. He is one of the very few state officials in America who work without compensation. An exchange says: "All of our present admirable laws for the protection of the game, fish and forests of Tennes-

see were drafted by him. The beneficial effects of these laws which his wisdom, ability and energy have placed on our statute books are already felt, and the people owe him a debt of gratitude for his work which some day they will undoubtedly pay."

**Argentine Re-
public to Pro-
tect Forests**

South America is beginning to show the world that she recognizes the value of her natural resources. The Republic of Colombia has already outlined a forest policy, and now the people of the Argentine Republic have taken up the discussion of forestry and its application to the country's rich hardwood timber areas. So far the destruction of valuable fruit trees has received more attention than that of forest trees. The following is from an article which recently appeared in *La Nacion*, and was translated by the Buenos Aires *Herald*:

"It is not only in the province of Buenos Aires that the ancient tree plantations are being destroyed; the evil has spread to the remotest inhabited corners of the republic. In a recent journey to and through the provinces of the interior, I have found on every hand the effects of the savagely reckless felling of timber and the censurable carelessness of the authorities who allow it. The destruction is general, the finest specimens of our indigenous trees have been ruthlessly sacrificed; not only those of spontaneous growth, but also those planted by our ancestors on behalf of their posterity.

"As for Tucuman, the Tucuman of poetic legends mentioned by Avellaneda, it is today almost unrecognizable. It would no longer be true to repeat his words where he says: 'The orange and lemon tree which produce in rich abundance flowers and fruit, perfuming the ambient air, feeding the inhabitants and affording them a house and a home, are most beloved by them as the emblem of the felicitous union of the useful and the beautiful.' No; even the famous and magnificent or-

ange trees of the city plaza have disappeared to make way for more pretentious plants that, unfit for the climate and inappropriate for the spot, present the feeble and insignificant appearance of weakened and sapless consumptives."

From the destruction of the fruit orchards to that of the forests is but a step. The work of the United States Government in protection is attracting attention there. So far, happily, the damage done to the forests is comparatively slight. The enormous lumber resources of the country are with few exceptions as yet practically untouched, and Argentina has a splendid opportunity to show its wisdom and foresightedness by taking this action before it is too late.

Lumber Losses from Fire An important statement regarding losses by fire to the lumber trade for 1907 is sent out by the Lumber Insurers' General Agency, of New York, compiled from the files of the *Journal of Commerce*. It shows that the number of fires in which the loss was not in excess of \$10,000 each in the United States and Canada last year was 332, with total losses of \$12,623,000. Allowing 15 per cent for small and unreported fires, the average monthly loss reached \$1,209,712 and the total loss \$14,516,550. While these figures look large, the year was in reality favorable to the lumber business, indicating that the better methods of fire protection prevailing in the lumber industry have had their effect.

THE CRY OF THE PINES

By Anne McQueen

Listen! The great trees call to each other:
 "Is it come your turn to die, my brother?"
 And through the forest, wailing and moaning,
 The hearts of the pines, in their branches groaning—
 "We die, we die!"

"We, who have watched the centuries dying,
 The span of years as an arrow flying,
 Ages seeming a day and a morrow;
 Lo, we have reached the time of our sorrow—
 We die, we die!"

"We, who have stood with our ranks unbroken,
 Breasting the storms, a sign and a token
 That the gale must cease; and the wild winds staying,
 Man, we shielded, is come, and is slaying—
 We die, we die!"

"Flaying the bark, and our bodies baring;
 Like dim white ghosts in the moonlight staring,
 Naked we stand, with the life-sap welling—
 Tears of resin, to gather for selling—
 We die, we die!"

All over the land are the forests dying,
 One piece of silver a tree life buying.
 Listen! The great trees moan to each other:
 "The as has scarred me, too, my brother—
 We die, we die!"

—Uncle Remus's Magazine.

WITH MEMBERS AND CORRESPONDENTS

Southern Timber is Almost Gone

The following letter received from H. C. Putnam, of Eau Claire, Wisconsin, gives some facts concerning the forest situation in the Southern States that are worthy of the most serious consideration:

"On my return from Florida I found your recent favor, and at once wrote my friend, Hon. J. J. Jenkins, a mighty strong letter on the subject of the forestry bills—not only the Appalachian-White Mountain bill, but that other very important one, the timber census bill.

"Of course, I know the House is crowded with bills, many of them 'dinky' ones to us who are interested in the forestry and water supply measures. I know the Appalachian country well. Am an old civil engineer, and was eight years in the mountains of the Carolinas and Georgia. It is appalling to think of that country being in the condition of the lower Potomac River, and it will be worse if the waters all run off at once as they do from the head of the Potomac, because the soils are poorer, and, the sources being higher, the streams are more rapid. I was also an engineer on the Mount Washington road in the early '50s, and remember well the timber we worked in. I was there again in 1894, and saw what had been done, and how the waste of soil, etc., was going on.

"Forester Pinchot says 'the timber will all be used up within twenty years.' I have been in the timber, south, all winter, and he is right. Three-fourths of all the timber in the south has been turpented already. That means dead, and must be cut. I saw many small mills cutting and selling lumber—the best they could get—for \$10 per thousand feet, mill run, and only sawing the best. The best in 1906, sold for \$20, mill run—now it is \$10. We have 240,000 acres

in LaFayette County, Florida, that we are trying to save from the ax and the turpentine still.

"Sincerely yours,
"H. C. PUTNAM."

Is Much Appreciated

Mr. E. L. Kill, Master of Science, Department of the Collegiate Institute at Guelph, Ontario, writes, "FORESTRY AND IRRIGATION is much appreciated."

Prevention of Forest Fires

A correspondent, writing from Capron, West Virginia, thinks the Government does not take a sufficiently active part in the prevention of forest fires, and speaks of the annual burning off of forests to improve pastures. The Government can not well take control in such matters where the forests are privately owned and the prevention of forest fires, as our correspondent should know, forms a large part of the rangers' work, during the summer and autumn months, on National forest areas. The letter follows:

"If the Government is really in earnest about forest preservation, then let it get after the fire bug, not in the national reserves alone, but in every state in the Union. The National Government has no power? Well, then, if they cannot make any laws that will give them the power the forests are irretrievably lost, for the states will not enforce the laws. Our mountains are burned off *every* year. The people burn them to improve the cattle and sheep range. Of course it kills the timber, but then the timber does not belong to them. There is a man here who has the woods fired so the huckleberry will not be *shaded* and consequently bear better, which means more feed for his hogs. There are the people who keep the woods fired regularly. The hog people are worse than all the rest put together. If we had laws by which hogs would not be

allowed to roam at large our fires would almost cease; but the hog owner is a voter and his name is legion. Unless the National Government can bring some pressure on the State Legislature our forests will simply be ash piles.

"Yours truly,
"V. P. KELLER."

**Range of
Topics
Treated**

A California correspondent interested in irrigation sends a copy of a newspaper containing an article on reforestation, regarding which he says:

"I took the liberty of quoting the very able and impressive article on reforestation which appeared in a recent number of your magazine. I am very much pleased with the range of topics and the very thorough way in which each one is treated in the magazine."

**Kentuckians
Becoming
Interested**

The Kentucky State Department of Agriculture, Labor and Statistics writes for certain literature on forestry matters and says that interest in this subject among the citizens of Kentucky is increasing greatly. A bill is before the General Assembly at the present time to start forestry work in the State.

**Recognize
Value of
Forestry**

There was a time when business men, such as lumber manufacturers despised forestry, but they now recognize its practical value. One instance of this was at a convention where a prominent southern dealer in lumber and timber publicly stated that had his company and several others known earlier the things which Mr. Pinchot told them at that convention, and if they had done business according to the ideas advanced at this time by him, they would have saved more than a million dollars.

The following quotation from a letter by Mr. W. O. McGowan, of Waycross, Ga., dealer in lumber and timber, and general superintendent of the Southern Pine Company, is indicative of this:

"Yes, sir, while Vice-President and Chairman of the Southern Industrial Congress in Washington, I invited a delegate from Texas to the chair and then made some remarks in support of the resolution relating to the United States Forestry Service—using about the expression Mr. Richards refers to: 'There is no doubt that had ours and several companies done business according to the ideas advanced in my talk with Mr. Pinchot they would have saved more than a million dollars.'"

THE BRAVE OLD OAK

From "Our Familiar Songs," by Helen K. Johnson. Copied by permission of Henry Holt & Co

A song for the oak, the brave old oak,
Who hath ruled in the greenwood long;
Here's health and renown to his broad
green crown,
And his fifty arms so strong!

There is fear in his frown, when the sun
goes down,
And the fire in the west fades out;
And he showeth his might on a wild
midnight,
When the storms through his branches
shout.

Chorus:

Then sing to the oak,
The brave old oak,

Who stands in his pride alone;
And still flourish he,
A hale green tree,
When a hundred years are gone.

He saw the rare times when the Christ-
mas chimes
Were a merry sound to hear,
And the squire's wide hall, and the cot-
tage small,
Were full of English cheer.

And all the day, to the rebeck gay,
They caroled with glad some swains.
They are gone, they are dead, in the
church-yard laid,
But the brave tree still remains.

Chorus: Then sing, etc.

AN INLAND WATERWAYS SYSTEM

Part of an Address before the California State Farmers' Institute

BY

Dr. Clarence B. Edwards, of the California State Promotion Committee

NOTHING is of greater moment in the political economy of the present than inland waterways. We have had a railroad era, which, sweeping on to its full tide, has forced its own limitation; for so great has become the development of the country, through railroad progress, that all lines are now taxed to supply the means of getting the products of that development to market. As a result of these pressing conditions, the navigable waterways of the country are occupying a large place in the public mind, as the logical and practical relief for a condition that is becoming unbearable.

It is realized that the congestion of freight of the railroads of the country must be relieved through the waterways. Millions of tons of the heavier commodities can be transported by slow water routes, thus permitting the railroads to transport the more valuable freight rapidly and expeditiously.

Germany long ago recognized the vast importance of her inland waterways, and as a result every city in that empire is connected with water transportation. On her 3,700 miles of natural waterways and 5,000 miles of artificial waters, the German government has expended the sum of \$1,400,000,000, yet the German empire has an area of but 208,000 square miles, while California alone has an area of 160,000 square miles, and the United States as an entirety has expended but a little more than one-third of the sum that the German government has found available.

What this development of Germany's waterways means is shown in the fact that through this wonderful inland waterway system that nation has developed an inland commerce exceeding her outside commerce of 2,-

250,000 tons annually. France has so thoroughly recognized the importance of water transportation that she has expended upon her harbors alone the vast sum of \$155,000,000.

The moment seems to have arrived in the United States for a concerted action of all the people of the Nation toward the betterment of inland waterways. Certain movements, great epochs in history, appear to spring full panoplied into being and astonish the world with their completeness. Such movements have been nurtured long in the minds of a few earnest and studious men who have worked out the problems to satisfactory solutions, and then have educated the people to conditions, so that when public announcement has been made the whole world grasped the idea and adopted it. So it is with the improvement of the inland waterways of the United States. These problems have been occupying the minds of studious men for years, and now they are prepared to ask for concerted action by all the people, and the people are ready for the opportunity.

Permit me to quote from an address delivered by Major T. G. Dabney, chairman of the Commission of Engineers, which investigated conditions in California, before the River Improvement and Drainage Association of California, in August, 1904. Major Dabney's remarks are of peculiar value as they show the great work accomplished in the improvement of the Mississippi river, and show how similar work can be carried to successful conclusion in California. Major Dabney outlined the sporadic and individual efforts of the people along the great waterway to protect their lands and to restrain the floods, and showed

their ineffectiveness. He then pointed out that a comprehensive plan, embodying a vast problem and an immense outlay of money, was devised, which could not be carried out in its entirety, owing to the fact that such immense sums could not be made available; then, when the people were almost despairing of successfully coping with the problem, it was proposed to begin the work by units, gradually combining them into a harmonious whole. The success of the first unit was shown, and Major Dabney says the following of the result:

"The accomplishment of this work at once inspired the people with renewed hope and energy, and the wheels of industry began turning rapidly. The next Legislature, in 1886, authorized a bond issue of \$400,000. From this period the industrial development of the district progressed in accelerated ratio. Forest lands were cleared; railroad building became more and more active; numerous small towns were built up along the railroads, some of which have grown into industrial and financial importance, and all are thriving business places; a great many banks were established and all appear to be thriving; numerous saw mills, besides wood factories of various sorts, with numerous outputs of lumber and wood products were built; many cotton compresses and cotton oil mills are engaged in profitable activity; and flourishing cotton and corn crops are being raised on land which shows river flood marks twenty feet above the ground."

"It is interesting to note," continues Major Dabney, "that the California Debris Commission has recommended a joint appropriation by the United States and the State of California of \$800,000, which it is proposed shall be applied to the initiatory step in the execution of the plan of reclamation recommended by the California Commission of Engineers in the Sioux City report—that is, to channel rectification. The Commission of Engineers estimated the total cost of the reclamation of the Sacramento Valley at

about \$23,000,000, and recommended that the whole amount be provided for before the work should begin.

"Taking an object lesson from the fortunes of this levee (the Yazoo district of the Mississippi River) it may be said with assurance that had it been proposed in 1884 to finance the whole project in advance this enterprise would never have gotten on its feet at all. As the event shows, however, the undertaking advanced step by step, growing stronger with each advance, and so better able to carry the burden, until it is now approaching consummation and is fully justified by resultant benefits."

Major Dabney thus emphasizes the importance of the unit system of work for river improvement; and while the report of the California Commission of Engineers, which he has quoted, gives a broad, comprehensive and complete plan of river development, it is neither necessary nor essential that this work should all be provided for before any part of it be done.

The plan for improvement of the waterways of California, as devised by the Commission of Engineers, in brief, is as follows:

(a) To confine the flood waters to the channels of the various streams by the means of levees, so as to prevent destructive inundations of the fertile valley lands.

(b) To correct the alignment of the river by cut-offs where necessary, and to increase its channel capacity by mechanical means wherever current action fails to accomplish this purpose.

(c) To collect the hill drainage, which now loses itself in the basins, in intercepting canals and convey it to the river at selected points.

(d) To provide escape ways over the levees for surplus waters during the channel development, and to provide for the disposal of this water in connection with the hill drainage.

(e) To provide for the relief of the basins from the accumulations of rain and seepage water by means of pumps wherever gravity drainage is not practicable.

The first steps in the work have been taken, in the formation of the River Improvement and Drainage Association of California. This organization has worked consistently toward one plan of complete improvement of all the inland waterways of the State, and one of its first moves was the framing of the bill which was passed by the State Legislature, known as the Sacramento Drainage Bill, which law has recently been declared constitutional by the Superior Court of Sacramento County. This law establishes the Sacramento drainage district and the election of the Sacramento Drainage Commission, which is now actively at work.

The establishment of the Commission is a long step toward a betterment of conditions in the great interior valley of California, which has been inundated periodically by disastrous floods—two recent ones, that of 1904 and that of 1907, being fresh in mind. These two floods alone caused a monetary loss to the State sufficient to have provided the funds for the complete plan of reclamation recommended by the Commission of Engineers, for it is estimated that fully \$25,000,000 was lost to the property owners and lessees along the river by the overflows since January 1, 1900.

It may be easier to get rid of money this way than by applying it to betterment of the river, but it certainly is not so wise.

The plan of the River Improvement

and Drainage Association is to improve the rivers by units, and have these finally coalesce into the plan in its entirety. Naturally this unit plan would begin in the lower reaches of the river in straightening channels and providing for the ready outlet of the surplus water, while the greater work of providing storage basins, in which this flood water can be conserved until later in the season, shall be completed.

The possibilities of such flood water storage are so great as to be astounding in their immensity. Not only is it possible thus to provide for a constant flow of water sufficient to make the streams, navigable at all seasons, but it would also provide for irrigation water at all times when needed; and it would reclaim millions of acres of fertile land in the valley.

It may be said in this connection that the entire \$23,000,000 required for the completion of this plan of betterment of the Sacramento River would be returned in the increased value of the adjacent lands alone, to say nothing of the benefits that would be derived by every land owner in the whole valley and the adjacent foot hills.

The era of the inland waterway is at hand, and it behooves every person who has an interest in cheap and ready transportation, in land reclamation, and in the conservation of water, to unite in the work of carrying out a general and specific plan for river improvement.

TREES

By Marion Elza Dodd, Glen Ridge, New Jersey

Doomed by the lust of men,
The great trees in solemn silence
Watch the course of human progress
As their kin meet the call to death.
No forest depth escapes the scourge
Of the blazing ax of woodsmen
Who are singing to swinging blows
In the rhythm of life unbound.
But what of the choir of winds
Wailing for the dead?

Sentinels of strength,
Proof of a destined purpose,
Evidence of a law divine
From winter buds to spreading leaf,
Inspiration to see beyond
The heights in view to those of faith,
The very sap-blood of our lives!
You who cut and scar, change the chant
Of winds to swaying melody
Abounding in life!

IN THE DEPARTMENTS

Forest Service, Reclamation Service, and Geological Survey

Irrigation in Republican River Valley, Nebraska

A report just issued by the Geological Survey (Water Supply Paper No. 216) states that about 35,000 acres are under irrigation in the Republican River Valley in Southern Nebraska. The principal irrigation is on the valleys and bench lands, though some of the ditches, of which there are about 130 miles, extend out on the lower adjacent valley slopes. The extent of irrigable land is large but the supply of water is not adequate for the reclamation of the entire area. In the eastern and central part of the Republican Valley region—that is, in Jefferson, Thayer, Nuckolls, Webster, Franklin, and Harlan counties—the average rainfall is sufficient for the growth of crops without irrigation except in an occasional season.

It has been hoped that the wells of the uplands and valley bottoms of the southwestern counties of Nebraska would yield enough water for the irrigation of large areas, but the supply has so far been found inadequate at most localities. The ground water, however, furnishes a sufficient supply for use in gardens, for raising fruit, vegetables, and flowers, and to a limited extent for certain crops. The best-known irrigation plant using well water is on the valley bottom a short distance southeast of Benckelman, where a twenty-acre garden is irrigated from a well twenty-seven feet deep. The water is raised by a gasoline pumping engine pumping 150 gallons a minute into a reservoir covering three-fourths of an acre to a depth of six feet.

The Los Angeles Aqueduct

One of the western enterprises that has attracted wide-spread attention throughout the East and that stands as a testimonial to the boldness and energy of western business

men, is the project recently launched by the city of Los Angeles for bringing to the gates of that city, from the Owens River Valley, 250 miles to the north, a supply of pure water from the slopes of Mount Whitney and its sister peaks along the eastern crest of the Sierras. It is planned to bring sufficient water to supply the needs of a city with a million and a half inhabitants. The estimated cost of this enterprise is \$25,000,000. It is launched by a city of 250,000 inhabitants. A water supply of equal expense in proportion to the number of inhabitants would cost the city of New York \$400,000,000.

The first issue of bonds for the preliminary work on the Los Angeles aqueduct was floated at par in the midst of the recent depression, although the bonds yield but 4 per cent interest per annum. This in itself is a financial feat of no small magnitude.

The determination of Los Angeles to go 250 miles across mountain ranges and deserts for an adequate supply of pure water was reached as a result of exhaustive study of all possible nearer sources and was finally determined upon only after it had been proved to the satisfaction of those responsible for the city's policy that the ground waters of the adjacent valleys, particularly those of the coastal plain below Los Angeles, which during recent years have been looked upon as the most promising source for increased supply, are all needed for the agricultural interests already established in these valleys and for the municipal supplies of the smaller towns that are scattered over them. An essential and convincing portion of this evidence was supplied as a result of studies carried out by the Geological Survey during the last few years upon the ground waters of the south end of the State, where, in strong contrast to San Joaquin and



Site of Gunnison Dam, Black Canyon, on Gunnison River, Colorado

Sacramento valleys, full use has been made during recent years of subsurface waters, and millions of dollars have been invested in their development and utilization.

Survey Work Messrs. E. M. Douglas
In Luquillo National Forest

and C. L. Nelson, two of the topographers of the United States Geological Survey, are now in Porto Rico engaged in running the boundary line of the Luquillo National Forest. The total length of the line to be run is about forty miles, and it is expected that the work will consume about a month's time. As stated in the last number of this magazine, the forest covers nearly 66,000 acres (about 100 square miles) in the northeastern part of Porto Rico, and is the only national forest in the insular possessions of the United States.

**Change in
Boundaries of
National
Forests**

The President has just signed a proclamation combining the Manzano and Mt. Taylor National Forests, New Mexico, under the name of the Manzano National Forest. Besides designating the two forests as Manzano No. 1 and Manzano No. 2, the proclamation makes several changes in the boundaries of each. Approximately 70,636 acres have been added to the old Manzano and an elimination of that part of the forest lying south of the Belen cut-off of the Santa Fe Railroad, amounting to 167,156 acres, has been made.

The additions are located along the northeast portion of Manzano No. 1, bordering the Estancia Valley. This includes the greater portion of the north and south San Pedro Mountains. This addition lies between the San Pedro Grant, Tejon Grant, and Ortiz Mine Grant. Much of the extreme northern portion of the addition covers the steep slopes of the North and South San Pedro Mountains, while the southern part covers a more or less smooth country along the east slope of the Manzano Mountains.

Considerable yellow pine is found in the area included in this recent proclamation in the vicinity of the San Pedro Mountains. On North San Pedro Mountains there are scattered clumps of yellow pine and red fir, while on the south side of the mountains there is some good pine in the canyons. The slopes of San Pedro Mountains bear a scattered stand of red fir and yellow pine. Much of this mountain has been cut over from time to time to supply the mines at San Pedro and Golden. With the exception of the areas covered by yellow pine, the remainder of the additions is covered with a heavy stand of juniper and pinon.

The Estancia Valley, which borders the additions on the east, is rapidly becoming a prosperous agricultural region, and large numbers of people are coming in from all parts of the Middle West to take up ranches in this locality. Under the new Campbell system of dry farming there has been considerable success the past few years, and hence it is very important that the timber and woodland embraced in the additions be protected from ruthless exploitation, in order that the settlers may have an abundant supply of wood for fuel and posts, both at the present time and in the future.

The elimination made by this proclamation of all the land lying south of the Belen cut-off, contains a considerable quantity of juniper and pinon timber, but on account of its isolation and the great scarcity of water it does not form a very important factor in the timber supply of the Estancia Valley. This area is chiefly important at the present time for sheep grazing.

The recent proclamation also added an area of 110,525 acres to the old Mt. Taylor National Forest, now Manzano No. 2. This addition is in two bodies, one on the high mesa northeast of the town of San Mateo, locally known as the Sierra Chivato, and the other on the ridge northwest of the town of San Mateo. The former lies between the Cebolleta, Ignacio Chaves and



Irrigable Land on Main Truckee Canal, Nevada

Bartolome Fernandez land grants and the original forest. A greater portion of this area is covered with a fair stand of yellow pine timber, which, although it may not be of any great commercial value at the present time, promises to be of great importance in the future.

In the other addition to the Manzano No. 2, on the ridge lying northwest of the town of San Mateo, there are some scattered bodies of yellow pine upon the higher points, while the remaining area is clothed with a dense stand of juniper and pinon, which will average at least ten cords per acre.

Cheap Cement Production

During the year 1907 there were produced at the cement mill at Roosevelt, on the Salt River project, Arizona, 42,145 barrels of cement at an average cost of \$2.27 per barrel. The mill was shut down for over four and one-half months of the period, but all expenses for office salaries, superintendent's wages and skilled laborers

kept on the payroll have been included in estimating the unit cost. The cost of repairs has also been included, but no allowance has been made for general depreciation of the plant. The shutting down of the mill was necessitated by the lack of requirements for cement by the contractor and the consequent crowded condition of the storage bins for both the clinker and the finished product. Moreover, the mill, when running, was doing so at only a little over one-half of its normal capacity. Had it been operated at full capacity continuously throughout the year, the average cost of the output would have been considerably less than \$2 per barrel.

Y. M. C. A. and Reclamation Service

Mr. Clarence J. Hicks, general secretary of the Y. M. C. A. of New York, has called at the Washington office and discussed with the Director the practicability of introducing Y. M. C. A. work in the principal camps of

the Reclamation Service and of its contractors in a manner somewhat similar to that carried on within the Canal Zone on the Isthmus of Panama. One of the traveling secretaries will probably visit some of the principal camps to ascertain for himself the general conditions and outlook. The Director has issued instructions that any such person be afforded all proper facilities for an investigation and advice from the principal men in charge.

Diversion of Bowl Creek An interesting feature of the Sun River project is the contemplated diversion of Bowl Creek into Sun River, thus turning across the Continental Divide toward the Atlantic Ocean water now running into the Pacific Ocean.

Water Right Application The latest returns from the various local land offices show that the water right applications under the Reclamation Act are as follows:

Minidoka project under public lands, 887 applications, totaling 58,811.72 acres, with no applications under private lands.

Huntley project, 175 applications under public land totaling 7,973.58 acres, with no applications under private lands.

Truckee-Carson project under public lands, 187 applications, totaling 11,429.10 acres, and under private lands 71 applications, totaling 8,945 acres.

Umatilla project, one application under public lands of ten acres, and two applications under private lands amounting to 114.50 acres.

Belle Fourche project under public lands, four applications, totaling 172 acres, and under private lands, three applications, totaling 399 acres.

Co-operative Construction

The Payette-Boise Water Users' Association, in carrying out its arrangement with the Reclamation Service for co-operative construction, has recently let contracts for the excavation of about thirty miles of laterals. The payment for this work is to be made entirely with certificates redeemable in payment for water rights in accordance with the contract between the United States and the Water Users' Association. Contracts were let to about twenty different parties, and the unit prices bid range from 15 to 18 cents per cubic yard for Class 1 material, and from 35 to 70 cents for Class 2, while for Class 3 a uniform price of \$1.50 per cubic yard is named.

Interest in Reclamation Work

Widespread interest in the work of the Reclamation Service is being evidenced by homeseekers from all parts of the country. The daily mail of the Service has grown to large proportions, and the indications point to a very heavy movement of settlers to the West this summer. The homemaker will find this season most propitious, as several of the large Government works are now completed and are supplying water to thousands of acres. Reduced rates on all railroads are advertised, and several train loads of homeseekers have been carried to Western points.

INDEX IS READY

The complete index for FORESTRY AND IRRIGATION for 1907 is now ready, and readers of the magazine who desire an index for their files should place their orders at once. Indexes

are not sent to readers unless they are requested; the supply is not inexhaustible, therefore those who want them for binding with their files should order immediately.



Wood, by G. S. Boulger. Edwin Arnold, London. Placing in the hands of those for any reason interested in the subject of wood, its supply-sources and its uses, in a single volume, a mass of well-prepared information hitherto unavailable except in a large number of scattered publications. The author has treated his subject rather more from the scientific standpoint than the popular, and the work may, therefore, possibly not reach so wide an audience as it would otherwise have done. The volume is divided into two parts, with four appendices. The first part treats of the origin, structure and development of wood; the recognition and classification of wood; its defects; selection, durability and seasoning; uses, sources of supply, and methods of wood testing; while the second part has to do with the sources, characters and uses of the woods of commerce. The volume is well printed, is illustrated with numerous handsome half-tone engravings and a large number of drawings, and is attractively put together.

Our Trees: How to Know Them, by Arthur I. Emerson and Clarence M. Weed. J. B. Lippincott Company, Philadelphia and London. Here is a volume that will prove invaluable to the student of forestry who is just beginning, and who wants to gain as rapidly as possible the rudimentary information that will enable him or her to recognize the trees of the forest. Little attention is given to the scientific side of the subject; in fact, the Latin names of the trees are only given in a sub-caption beneath the illustrations. Of these there are almost two hundred, and each illustration shows several figures of the same tree—the trunk, a branch of the foliage, and the fruit, seedpod or cone, as the case may be. The text is written in a delightfully understandable style, and the illustrations are such as to make the subjects easily recognizable. The book is a handsomely gotten up volume, and should be in the library of every man or woman who is inter-

ested in the vital question of forest conservation.

The Relation of the Southern Appalachian Mountains to Inland Water Navigation; Forest Service Circular No. 143. This is worthy of more than passing notice, it being a study, by M. O. Leighton and A. H. Horton, of the United States Geological Survey, of the matter which forms the title of the pamphlet. The work gives the result of investigations made by the Geological Survey covering the whole territory of the Atlantic seaboard from the Potomac River southward; it shows clearly the vastly increased use that can be made of the rivers of this entire region, for transportation purposes, when the crest of the Appalachian system is placed under Government supervision and the process of total deforestation is ended. The tabulations contained in the work may be depended upon as being exact and accurate; and the pamphlet is a most valuable reference work.

Other Publications Received:

Quarterly Journal of Forestry; issued by the Royal English Arboricultural Society. Detailed information regarding forestry work in the British Empire, together with a brief resumé of important forestry work in other regions of the world.

Bulletin of the New York Botanical Garden. Containing reports of the various officials and departments for the year 1907.

Prospectus of the Colorado State School of Forestry, for 1908. Giving an outline of the coming year's work in the school, with a brief curriculum, and numerous illustrations, many of which show the result of work done by students at the school.

The Indian Forest Records; published by order of the Government of India. This volume contains an exhaustive study of a single apparently insignificant insect—the lac insect, that, by its activities, causes two or three species of trees native to Indian forests to produce shellac and other forms

of the lac so universally used in the preparation of fine varnishes.

Proceedings of the Tenth Annual Convention of the Associated Boards of Trade of Eastern British Columbia. In this report are contained resolutions adopted at the convention touching upon forestry matters such as affect both the Canadian Provinces and the United States. The different Boards of Trade are emphatic in their demand that the Provincial Governments become more active in adopting and enforcing protective measures, and a progressive lumbering license is advocated in place of the present royalty system in vogue throughout the Dominion.

Bulletin 95, of the Soils Section, Iowa State College of Agriculture and Mechanic Arts. A study of soils in the Missouri loess area, with a consideration of plant food and its sources, and a recommended treatment for hilltops in the Missouri loess area.

The Mosquito as a Sanitary Problem; by Edward A. Ayers, M. D. A lecture delivered by Dr. Ayers at the Academy of Medicine, New York City. The lecture, printed in pamphlet form, with a number of striking illustrations and plates, is intended to show the connection between mosquitos and malaria, yellow fever and other allied forms of disease. It also shows the practicability of exterminating the mosquito, and consequently the diseases transmitted by it, by systematic drainage or by scientific treatment of breeding grounds, such as is done by means of crude oil in various parts of the country.

Bulletin of the California Physical Geography Club. The important paper in this issue is "Natural Warfare and Human Welfare," by G. B. Lu'Il. The report of the semi-annual meeting of the club contains numerous interesting paragraphs; and the volume contains, also, notes on Death Valley and the Colorado Desert that are of more than ordinary interest.

Forestry and Forest Preservation in Alabama. This is the title of Bulletin No. 1 of the newly organized State Commission of Forestry. It begins with the true statement that the preservation of the natural resources of a State depends entirely upon the interest the citizens take in the State's welfare.

The importance of forest preservation is pointed out, directions are given how to fight forest fires, and a summary of the forest laws of Alabama. Attention is called to the Appalachian National Forest proposition. People

are urged to refrain from firing forests; and on various grounds to look to the future. Suggestions are made to owners of Alabama forest land. The book closes with the text of the new forest law.

This book is the result of the Commission's decision that the thing needed is to acquaint the people with the situation. No law is automatic; and the needed interest on the part of citizens is sought to be aroused.

Canada's Approaching Peril is a pamphlet issued in both French and English editions by the Biggar-Wilson publishing house at Toronto. It shows the vital necessity of forests, with warnings from the history of dead and dying nations, and calls the unrestricted export of pulp wood a menace to the country.

Forest Planting in Vermont. Bulletin No. 132 of the Vermont Agricultural Experiment Station tells how to manage lands and encourage natural reforestation, and how to supplement this by judicious planting.

The Transactions of the Royal English Arboricultural Society, Vol. VII, Part 1, are at hand. This issue of the transactions contains the list of the members of the Society, headed by the Patron, His Most Gracious Majesty, the King. The members number about 1,200.

Books on Massachusetts Trees:

Forest Trees of Massachusetts—This is a pocket manual published and printed by the State Forester in order to have a practical working description of commercial trees, at the command of Massachusetts citizens. A page is given to each tree, with a line cut illustration.

Forestry from a Commercial Standpoint—Also by the Massachusetts State Forester, F. W. Rane, is a fitting accompaniment to the foregoing, as is also the large pamphlet on *The Study of Trees in Our Primary Schools*, by Professor Rane and Dr. Clarence M. Weed. This is a beautifully printed book with illustrations. It suggests in particular the observance and collection of leaves by young children.

The Massachusetts State Forester's report for 1907 has just been issued, with illustrations. A notable feature of this is the distribution of tree and seed collections to citizens of Massachusetts at a low price.

